

# Municipal Journal

Volume XLII

NEW YORK, JUNE 28, 1917

No. 26

## IMPROVED STREET SYSTEM FOR ST. LOUIS

Prepared by City Plan Commission—Principal Aim is to Provide More Adequate Facilities for Traffic—Street Width Standards—State Legislation Desired—Prompt Action Would Save Expense.

By ANDREW LINN BOSTWICK.\*

The City Plan Commission of St. Louis, a regularly constituted department of the municipal government, has for more than a year been at work upon the preparation of a comprehensive city plan, according to a definite program adopted at the outset. The first and one of the most important studies completed relates to the development of a system of major, or principal, streets designed to meet the needs of traffic and business for years to come. This street plan has been prepared by the commission, with Harland Bartholomew as its engineer, and has been submitted to the Board of Public Service (which corresponds in a general way to a board of public works) for approval—with the idea that in the future all street work will be done in accordance with the recommendations contained therein.

The street system of St. Louis as it is to-day shows certain distinct characteristics, some of which make street planning a difficult matter. The thorofares in the oldest parts of the city, near the river, were laid out on the "checkerboard" plan, and are so narrow as to be inadequate to meet present demands. In many of the newer residential sections the street system is excellent. St. Louis presents occasional examples of good street planning and many instances of lack of foresight on the part of the municipality in laying out thorofares.

The city is fortunate in possessing a number of radial arterial thorofares running from the outlying sections toward the downtown business district. Some of these, however, are not actually connected with the business district in an adequate manner, and provision for such connections has been the subject of special study by the City Plan Commission.

St. Louis is a city of 60-foot streets. Seventy-five per cent of the total street mileage is of this width, which is too great in the case of minor residential streets and too little in the case of main thorofares, especially when they are occupied by street railway tracks. The commission recognizes three main types of streets: (1) Arterial thorofares running to the business section and carrying heavy traffic; (2) crosstown streets, often occupied by street railways and having a certain amount of business development, and (3) minor residential or industrial streets. In St. Louis there has been practically no recognition of different types, with the result that the development has been rigid and with little regard to the purposes for which the various streets are likely to be used. It should again be emphasized that there are not only some 60-foot streets in St. Louis that should be widened, but others that might well be made narrower, at least with respect to paved roadway.

As previously intimated, the streets near the river are for the most part of inadequate width, and as the main business district is in this region it is here exceedingly

difficult to provide for proper street facilities, where excessive cost makes widening almost out of the question.

In 1916 the commission made a traffic census, in order to determine the extent and character of traffic movement on the city's streets. This was essential in determining the thorofares that should be developed in the major street plan. Counts were made at 245 points on 84 different thorofares.

The census showed that while horse-drawn traffic was not at all concentrated, automobile traffic was very greatly concentrated on certain routes offering the least obstruction to through travel and having smooth pavements. A need was shown for more uniform distribution of east and west traffic, and for better approaches to the business district from the north and south, especially the south.

Studies show that much traffic from the southern part of the city goes north, and then east, to reach the business district. In the southern section of the city resides 38 per cent of the population, but only 19 per cent of the traffic entering the business district does so from the south. In the western section is found 32 per cent of the population, but 51 per cent of the traffic to the business district comes from the west. The above indicates clearly the necessity for adequate approaches for traffic from the south to the business center.

As previously stated, the commission's plan has been to devise a proper street system for the city as a whole, rather than to provide for spectacular development in a few particular localities. The final recommendations were arrived at after careful study by both the engineer and the members of the commission.

The proposals in the major street plan are for the widening and straightening of existing thorofares, for the opening of connecting links where necessary, and for the extension of streets into undeveloped sections of the city to anticipate future demands. In other words, the existing system of thorofares is remodeled into as nearly an ideal system as conditions will allow. It is really a problem of replanning, of rectifying the errors of the past and insuring against similar mistakes in the future.

The street plan, to be more specific, provides for the widening of various radial thorofares and their better connection with the business district; for a system of main east and west and north and south crosstown thorofares, at suitable intervals thruout the city; for the extension of streets into undeveloped areas, when warranted; and for the elimination of "jogs" and unsuitable crossings of streets at points where there is traffic congestion.

In studying the downtown business district, the idea has been to circulate the main volume of traffic about

\*Secretary, City Plan Commission, St. Louis.

it rather than *thru* it. Practically all the streets in the business section are only 60 feet wide, and, with one or two exceptions, could probably never be widened owing to the great cost involved. There has been considerable instability of development in the business section, which a proper street plan should eliminate.

The commission has adopted certain standard rules for determining width of major streets. They represent minimum requirements, and are as follows:

Without street car tracks:

60 feet minimum—2 sidewalks, 28 feet; 4 vehicles, 32 feet.

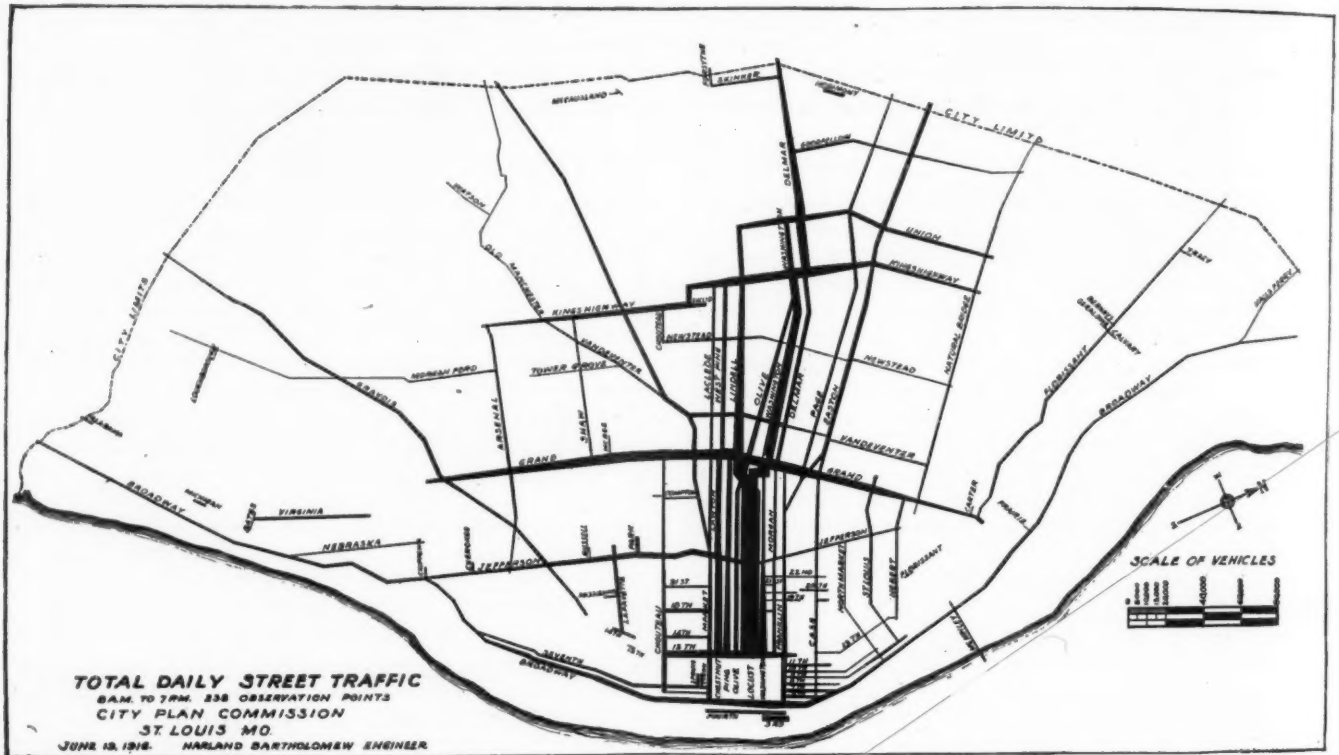
80 feet where possible—2 sidewalks, 32 feet; 6 vehicles, 48 feet.

With street car tracks:

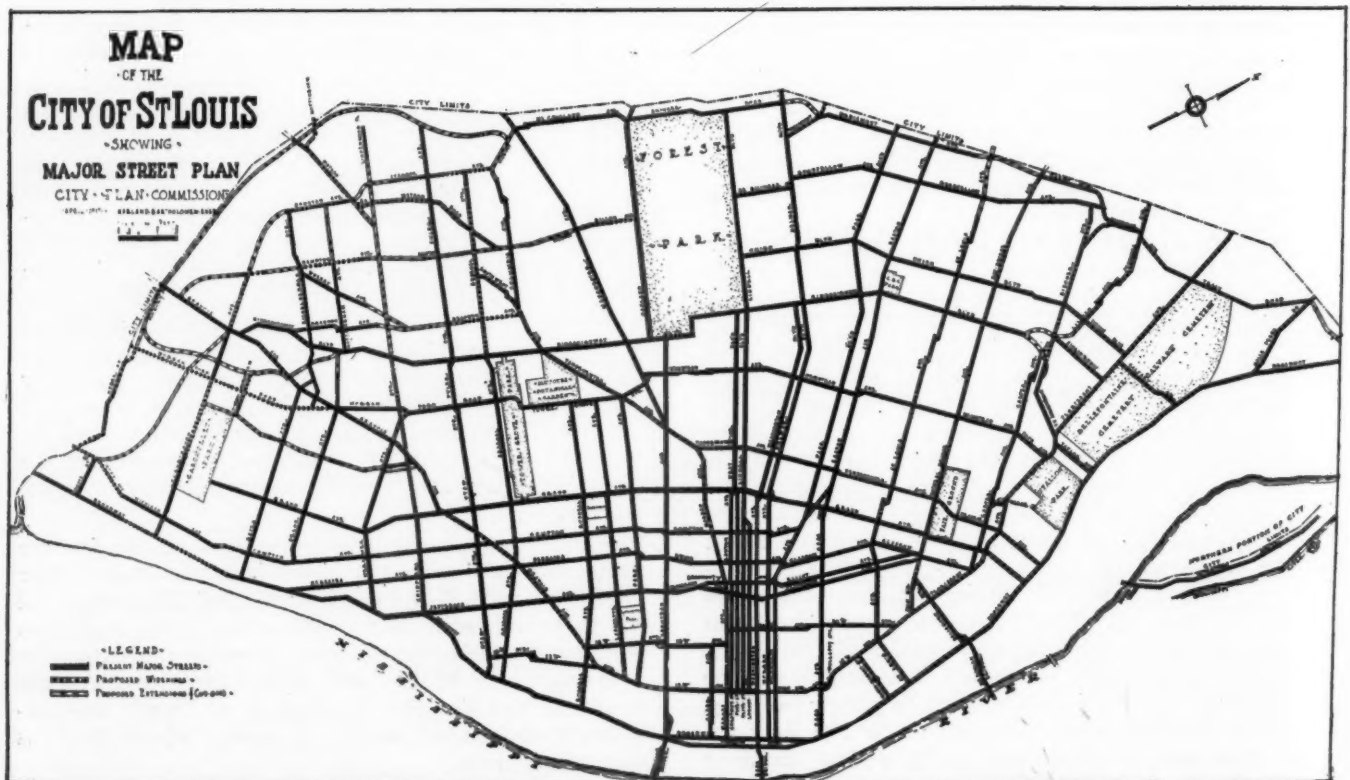
80 feet minimum—2 sidewalks, 28 feet; 4 vehicles, 32 feet; 2 tracks, 20 feet.

98 feet where possible—2 sidewalks, 30 feet; 6 vehicles, 48 feet; 2 tracks, 20 feet.

The recommendations in the report are based on the



AMOUNT OF STREET TRAFFIC ON THE PRINCIPAL THOROUGHFARES.



MAP SHOWING PRESENT MAJOR STREETS AND PROPOSED WIDENINGS, EXTENSIONS AND CUT-OFFS.



above, as far as the question of street width is concerned. In setting these standards, future rapid transit development has been considered.

In carrying out a plan for public improvements of such magnitude St. Louis would be greatly aided by the grant of various powers which she does not now possess. For this state legislation is necessary. The commission has recommended laws on the following subjects:

Planning commissions in small cities and in counties adjacent to large cities, to enable cooperation between St. Louis and its suburbs.

Street widening by the establishment of building lines. Establishment of street lines upon the city plan.

Permanent commissions to assess benefits and damages in street opening and widening cases.

Excess condemnation (state constitutional amendment).

Control of all subdivision plats by the city (thru refusal to record unless approved).

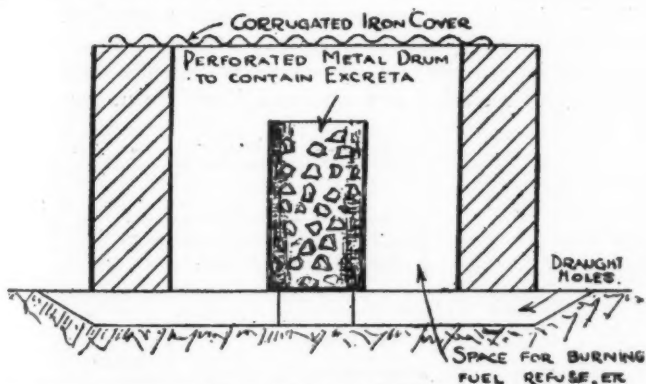
It is also recommended that the city's debt limit be increased, that the term for which bonds may be issued be lengthened to approximate the life of the improvements which they cover, and that some system of issuing local improvement bonds be devised.

The commission has recommended immediate action on four of the most important improvements called for in the major street plan, as follows:

The widening of two important east and west streets leading from the business district—Olive street and Washington avenue. The latter widening is now under ordinance. These two improvements will relieve undue congestion in east and west traffic.

The widening and extension thru to the business district of two great radial thoroughfares—Gravois avenue on the southwest and Florissant avenue on the northwest. These two improvements will provide adequate thru traffic facilities for the southern and northern sections of the city.

It should be borne in mind that, however costly may be the extension of a major street plan, an even greater expense will be entailed by further delay. A properly developed system of thoroughfares is essential to the economic growth of a city, and foresight will enable the municipality to develop in the right way and at a minimum ultimate expenditure.



SMALL INCINERATOR FOR CARBONIZING EXCRETA.

In the carrying out of the street plan it will be possible to greatly improve the city's general appearance, not only through the creation of broad, pleasing thoroughfares, but also thru the further removal of poles and wires, the improvement of lighting fixture types, the proper treatment of street intersections, and more extensive tree planting. The plan affords the most excellent opportunity for practical and harmonious municipal development.

## SANITATION IN BRITISH ARMY CAMPS

### Combustible Refuse Disposed of by Incineration—Obtaining and Purifying Water Supplies—Provisions for Bathing—Infectious Diseases.

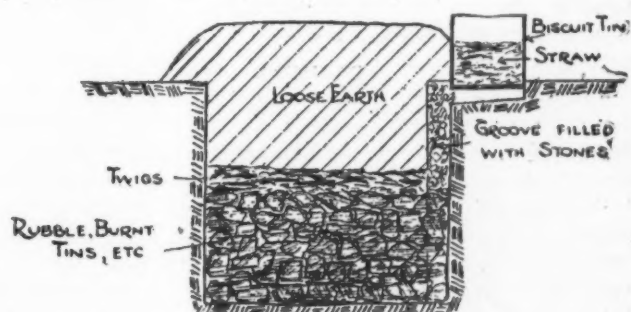
(Concluded from page 786.)  
REFUSE DISPOSAL.

The refuse consists of jam and meat cans, paper, straw, old clothing, and food waste. All refuse is burned in an incinerator. The ashes from the incinerator, including burned cans, are sometimes used for making paths in muddy places. The incinerators are built on the beehive principle and are made of brick or sod. Refuse is put into suitable movable receptacles and collected daily by a cart and dumped near the incinerator. Incombustible refuse not mixed with putrescible matter is dumped on a suitable area outside the town.

The incinerator for ordinary refuse is merely a structure shaped like a sewer manhole, about three feet in diameter at the bottom and three or four feet high, with four to six holes through the wall around the bottom, and iron bars set horizontal across the structure just above these holes to serve as a grate.

When excreta are burned with the refuse, the same general form of incinerator is used, but it is carried to a height of about 6 ft., the diameter of the opening at the top is reduced to about 18 in., and a clean-out opening with an iron cover is provided just above the bars. The refuse is fed in from the top, the excreta being mixed with it. This has been used successfully for burning excreta with no other fuel than ordinary refuse.

Where there is a small number of men their excreta have been burned in a bricked-in enclosure about 3 ft. square and 2½ ft. high, with draught holes at the bottom, over which is laid a corrugated iron cover; the excreta being mixed with a little refuse and put into a perforated cresol can (which is about 1 ft. in diameter and 2 ft. high), which can is placed in the middle of the enclosure and dry wood burned around it. Other types of incinerators have been tried, including a portable steel one which is essentially an inverted box 6 ft. long, 2½ ft. wide and 3 ft. high, with a set of bars to serve as a grate fastened 12 in. above the bottom, and a hole a foot high and 18 in. wide at the bottom of one end and another small hole in the top at the other end to



GREASE TRAP.

furnish draught (the end containing the bottom hole being placed to face the wind). The top is removable.

It is of course appreciated that all these devices are necessarily of a make-shift character, because the contrivances must be available immediately and in great numbers, and it is desirable to use, so far as possible, material at hand in quantities in every army unit, such as cans and boxes in which food has been delivered.

Kitchen and other greasy water is passed through an

improvised grease trap and run into pits about 4 ft. deep containing coarse refuse (bricks, cans, etc.) and covered with a foot or two of loose earth. The grease trap is a biscuit can perforated at the bottom and half filled with straw; the straw, which collects the grease, tea leaves, etc., being removed daily and burned in the incinerator. Water used in general washing is run into the same pit unless there is a stream that can receive it, a grease trap being used in either case.

#### WATER SUPPLY.

The selection of the water supply must be made with great care. That for drinking and cooking is obtained from shallow, deep, or artesian wells and springs and is distributed by water carts of 110 gal. capacity fitted with sterilizing apparatus. Medical officers are instructed to see that none but treated water is issued to troops and that those in charge of the distribution know how to operate the apparatus and keep the carts clean. Chloride of lime is in general use for treating the water. (Incidentally, returning soldiers report that they become so sick of the ever-present odor and taste of chlorine that only extreme thirst drives them to drink the water.) Two parts of alum are used with one part of chloride of lime, the former to precipitate suspended matter.

The apparatus used consists of a galvanized iron cylinder about three feet long, inside of which are a canvas filter about 25 in. long kept in cylindrical form by a wire cage, and a wire gauze container for chemicals at one end. A small pump raises the water from the source and forces it through a hose into the cylinder and through the chemicals. Passing through the chemicals and dissolving them, the water enters the canvas filter, which consists of three layers of finely woven canvas. This apparatus is capable of treating 180 gallons per hour and is recharged with chemicals for each 100 gallons. After treating, the water is exposed in the cart for from a half-hour to two hours to permit action of the chemicals and remove taste as much as possible. When water can not be purified in this way, acid sulphate of soda tabloids are issued to the men, one tabloid being sufficient to sterilize the contents of a regulation army water bottle. In small, detached units it is often the practice to supply boiled water.

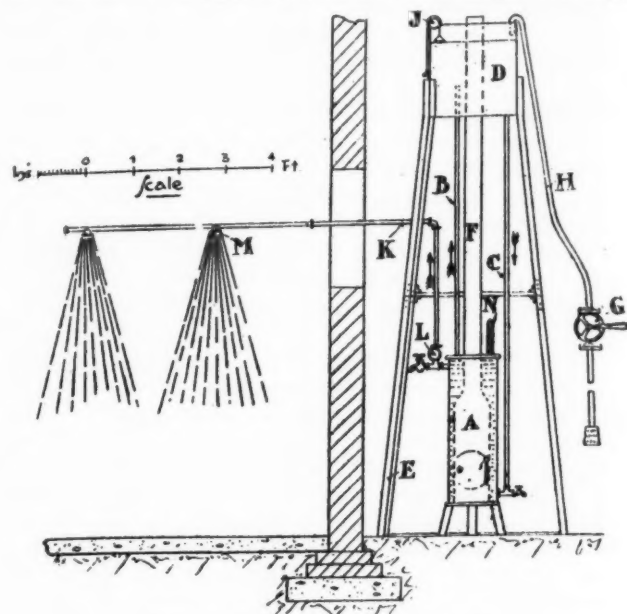
It is impossible to take the water carts very close to the firing line, and water is carried to the trenches in gasoline cans, rum jars or barrels. Great care has to be exercised to keep these clean.

#### BATHING.

For keeping down body lice among the troops, bathing is necessary, and frequent change of underclothing, disinfection of this and of blankets, frequent change of straw bedding, and free use of anti-vermin preparations. It is arranged that every man shall have a bath at least once a week. Where factories could be used and waste steam was available, this was used to heat water in tubs that were installed there. A second vat contained lukewarm water to enable the bather to take a plunge after washing. The tubs were scrubbed out with cresal solution every evening.

Later a spray apparatus was adopted instead of tubs, the apparatus packing into small space and being set up or taken down in about half an hour. An apartment about 12 by 8 with a stone or brick floor is used, with rooms for dressing containing seats, clothes hooks etc. If no such accommodation can be found near a stream, wooden buildings are constructed there by the engineers. The spray apparatus consists of a boiler about three feet high, connected by pipes to a cistern D, supported 11 feet above the ground by an iron tripod E, and having

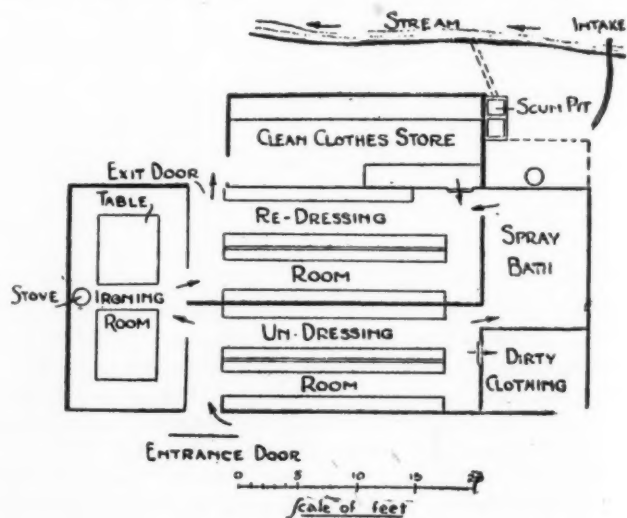
a capacity of 26 gallons. The flue F from the boiler fire is taken through the cistern to utilize the heat therein. The level of water in the cistern is maintained by means of a small semi-rotary pump G, which raises water from the source of supply and forces it through the supply



PORTABLE HOT-SPRAY BATH.

hose H. Float gage J indicates the level of the water in the cistern. The supply pipe K to the sprays is taken from the top of the boiler and has a control valve L. When this valve is opened the hot water from the boiler is forced to and through the spray nozzles M by the head of water in the cistern. A thermometer is fixed on top of the boiler to insure the water being of the desired temperature. Included with the apparatus are wooden foot rests to cover the floor under the spray. The whole apparatus folds up into five small crates. It takes about 15 minutes to heat the water. The average quantity used is about 1½ gallons per man. One spray bath is capable of bathing from 600 to 800 men a day.

The bathing of the men is regulated as follows: The first batch of men enter the undressing room and hang their clothes on numbered pegs. They leave their soiled underclothing in an apartment or in boxes provided for that purpose and enter the bathroom, where they wash with soap under the hot water sprays. While they are washing, their clothes are removed from the undressing



PLAN OF BATH HOUSE.



room to the ironing room, where the seams of tunics and trousers are cresoled and ironed with hot irons. After being ironed, the clothes are taken to the dressing room and hung on pegs with numbers corresponding to those in the undressing room. On the way from the bathroom to the dressing room the men receive clean underclothing. In the meantime, a second batch of men is undressing. The soiled underclothing is disinfected by steam, taken to laundries, washed and re-issued. There are four bath houses for a division, one for each brigade and one for the divisional artillery. All blankets are disinfected at regular intervals.

If a case of infectious disease is discovered it is reported to the divisional sanitary officer and full details of the case are obtained and the records kept, special attention being paid to the sources of infection, including carriers, and its connection with other cases. The billet last occupied by the patient is thoroughly disinfected, all bedding straw removed, and the quarters sprayed with a solution of formaldehyde, 8 fluid ounces of formalin to a gallon of water. One gallon of this solution is used for about 400 square feet. If practicable, the floors and walls are painted with disinfectants. The blankets and clothes of patients and "contacts" are steam-disinfected and in some cases the billet is quarantined. Infectious diseases among civilians also are investigated and dealt with in the same way.

#### CONCRETE-ASPHALT ROADWAYS.

The practice of road construction in Pennsylvania, and to a greater or less extent in other states as well, is rapidly progressing towards the construction of concrete foundations under all roads of any importance, and the use of bituminous wearing surfaces on those where the traffic is not such as to demand granite block or other more expensive materials. The theory upon which roads of this kind are designed is that the concrete base will resist the weight of the traffic, while the asphalt surface will withstand traffic abrasion and in addition protect the concrete base from deterioration due to changes in temperature and in moisture content.

Both of these materials have been used separately in the form of concrete roads with a concrete wearing surface and bituminous roads on a broken stone or similar base. Concerning the latter, the following statement was made recently in a communication addressed to highway officials by a large construction company:

"Our roads are not wearing out by increasing quantity of traffic nearly so fast as they are being broken down by increasing weight of traffic. The remedy for this condition is the adoption of more substantial bases for new roads in rural districts as well as in cities. Used in this way for foundations, concrete serves its true function as a road material. Protected by asphalt wearing surfaces, it does not exhibit the heaving, cracking and disintegration that is seen when concrete is exposed as a road surface to varying moisture and temperature conditions.

"The road of asphalt and concrete is therefore the best dependence of those who desire durability and a means of carrying present traffic weights. It is earnestly recommended, therefore, that tax payers and those who represent them should act in their own interest and demand, if concrete is to be used, that both it and asphalt shall be employed, not necessarily so as to consume the maximum amount of either, but so as to get maximum service from each."

A large amount of the matter published concerning the maintenance of concrete roads has to do with

methods of controlling or repairing cracks in the same, and surface disintegration, and it would appear that these phenomena are of such common occurrence as to make imperative continued experiment and research looking to measures for preventing them.

On the other hand, authorities are becoming more firmly impressed with the fact that an ordinary broken stone base under a bituminous wearing surface is subject to constant menace from traffic weight, and that to prevent a bituminous-surfaced road from destruction it should be placed on a more substantial base, such as cement-concrete. A concrete base is practically uniform in strength, will transmit stresses and bridge any slight depressions in the sub-grade. Whereas a broken stone base would need to be of more massive construction than has been used in common practice, which would make its cost equivalent to, if not in excess of,



ASPHALT SURFACE ON CONCRETE BASE. INTEGRAL CONCRETE CURBS PREVENT WEARING SURFACE FROM SPREADING OR BREAKING AT THE EDGES. SHOULDERS NOT YET CONSTRUCTED. RHAWN ST., PHILADELPHIA.

that of a concrete base possessed of like strength. About the only exception made to the substitution of concrete for broken stone is in the case of old macadam roads sufficiently thick or compact to compare favorably with concrete in strength and durability. That there should be substantial thickness even in the case of old roads used as foundations for new asphalt tops is indicated by the recent statement of a prominent highway engineer, who said that in his opinion "85 per cent of the failures of most of the macadam roads to-day are due to the foundations giving way under the heavy loads that are now carried."

While much has been written concerning the defects of each of these materials used separately, the economy and efficiency of the combination road employing both of them is generally accepted as a matter of course. The wearing surfaces may wear out but do not go to pieces and the concrete foundations give no trouble by settlement. In this connection it may be noted that there is a tendency to increase the thickness of the concrete for heavy traffic roads as compared with the earlier roads of this type, some of which, as in Pennsylvania, have concrete bases only 4 inches thick. These roads are still giving excellent service under all kinds of traffic, but many engineers believe that in the future this thickness should be materially increased.

Probably the chief reason why the combination road has not been built more extensively is the idea that their cost is high; but considering the greater durability, it



BITUMINOUS CONCRETE ON CONCRETE BASE.  
With concrete header curbs. Built by the Philadelphia Highway Bureau.

is by no means unreasonable. A country road built by the Philadelphia Highway Bureau gave the following unit costs: Portland cement base, \$4.36 per cubic yard; asphalt paint coat on base, 5c per square yard; bituminous surface, 60c per square yard. This road has a 4-inch concrete base and a 2-inch asphaltic concrete top. With a width of 16 feet, this gives about \$11,000 a mile for a country road. Work on this road was done between September 23, 1914, and January 25, 1916.

Another road built by the Pennsylvania State Highway Department, beginning in the fall of 1915, has a 5-inch concrete base and 2-inch asphaltic concrete wearing surface, and the contract prices were \$4.50 per cubic yard for concrete foundation with integral curb and 69c per square yard for bituminous wearing surface, which prices give about \$12,000 a mile for a 16-foot country road. These costs will compare favorably with those of a road built wholly of concrete, or one with an asphaltic wearing surface on a broken stone base of adequate thickness and properly constructed.

#### STREET CLEANING COSTS IN PHILADELPHIA.

In the June 14th issue was given a description of some phases of the street cleaning activities of the Bureau of Highways and Street Cleaning at Philadelphia, during the year 1916. In connection with these, Superintendent Connell presented a tabulation of the costs of this work during the year, which costs are shown in the accompanying table. Averages were obtained for each of eight districts and for the service performed by machine brooms, flushers, hose flushing, squeegees and block men or white wings.

In the machine broom sweeping, accounts of special block tests were so kept and used as to furnish relative costs of cleaning granite block, brick, wood block and sheet asphalt in each of the districts where these several classes of pavements occurred. The figures so obtained were in almost every case lower than those obtained from

the regular reports of the several districts, the average difference being about 13 per cent. They probably, however, represent much more closely than this the relative cost of cleaning the different kinds of pavement. These figures indicate that, calling sheet asphalt 100, cleaning granite block cost 155, brick 121 and wood block 104. In the use of water, it is seen that the machine flushers used on the average more than twice as much as the squeegees; while the use of hose flushing in District 3 required five times as much as the squeegee and three times as much as the flusher service in the same district.

#### LABORATORIES FOR SMALL WATER-WORKS\*

##### Desirability and Cost—Learning Bacteriological Technique—Encouraged by Georgia Health Board.

It is becoming more and more evident that bacterial analyses of water should be made several times a week, or even daily, to accurately check the quality of water supplied by a water works plant. This is peculiarly true of plants deriving raw water from large streams, since such water varies considerably and sometimes quite suddenly in bacterial content, chemical quality and turbidity. In shipping samples to a state or other distant laboratory, there is necessarily considerable delay in obtaining results, and therefore intimate touch with plant operation is lost. If the analyses, however, can be made by a laboratory at the plant, the control is direct, enabling the superintendent and attendants to interpret the results in relation to the procedure of plant operation. The results of bacterial tests may be promptly observed on the first or second day after taking samples, and as one of the prime objects of the examination is to correct faults in operation of the plant, prompt bacterial results are needed.

For several years the State Board of Health of Georgia has encouraged superintendents and local officials of water works to start small local laboratories and six are at present in service in that state. That more laboratories have not been established in connection with water works plants is probably due to the fact that superintendents are apt to regard such analyses as too difficult and time consuming to be undertaken lightly in addition to their regular duties; also that the expense would be too great.

As to the cost, it is now possible to secure good equipment for routine water bacteriology, such as the bacterial

\*Abstract of a paper before the Tri-State Water and Light Association. By Ray C. Werner, of the Georgia State Board of Health.

#### STREET CLEANING ANNUAL UNIT COST DATA—PER 1,000 SQUARE YARDS.

District Number.	Machine Broom.						Squeegee.		Flusher.	Hose Flus'g.	Block-men.	District Number.
	Special Block Tests.					Avg. From Dist.	Avg. From Block Tests.	Avg. From Dist.	Avg. From Dist.	Avg. From Dist.		
	Granite Block.	Brick.	Wood Block.	Sheet Asph.	Avg. all Classes.	Rep'ts.	Rep'ts.	Rep'ts.	Rep'ts.			
1-A	.183	...	...	.134	.179	.196	.131	.223	...	...	.088	1-A
1-B	.220	.193	.177	.128	.212	.202	.174	.204	...	...	.081	1-B
2	.290	.211	...	.160	.280	.323	.130	.196	.156	...	.179	2
3	.266	.171	.135	.145	.252	.330	.118	.094	.157	.474	.282	3
4-A	.243	...	.203	.188	.241	.320	.176	.126	.174	...	.216	4-A
4-B	.242	.218	.205	.168	.216	.252	.115	.115	...	...	.140	4-B
5	.271	.218	.157	.182	.232	.462	.218	.192	.148	...	.111	5
6	.234	.178	...	.163	.205	.256	.137	.182	.150	...	.174	6
Average	\$.246	\$.193	\$.166	\$.159	\$.226	\$.282	\$.148	\$.156	\$.157	\$.474	\$.152	Average
Gallons of water used per 1,000 sq. yds. cleaned, ...						98.	240	522	...	...	...	
Cubic yards of dirt removed per 1,000 sq. yds, ...						.158	.031	See Note	...	.051	...	

Note—Squeegees used on sheet asphalt and wood block streets only. Flusher dirt removed by blockmen.

Cost of labor and equipment per day assumed as follows:

Superintendent	\$.4.00	Dumpmen	\$.1.50	Dirt ( Wagon	\$.5.00
Foreman	2.50	Machine Broom	5.50	Cart	3.50
Gangmen	1.75	Squeegee	6.50	Sprinkler	5.00
Blockmen	1.50	Auto Flusher	15.00		



counts and tests for *B. coli*, for about \$125. The cost of chemicals and bacteriological media is quite small after the laboratory is once started. The incubator, sterilizers and similar equipment can now be bought to operate by electricity, gas or gasoline, as may be most convenient. Electricity is now available at almost every water works, so that electrical equipment is desirable.

The average superintendent can easily learn the necessary bacteriological technique for making routine control tests. He should be provided first with one or two good books on water bacteriology and filter plant operation. After some familiarity with the subject has been gained by the study of such books, the superintendent can acquire actual experience in plating samples, the sterilization of media, and other procedures of routine bacteriological work. The Georgia State Board of Health offers to train at its water laboratory any superintendent who wishes to install a laboratory at his plant. After a few days of training under an experienced worker, he is in a position to start his own work, making the counts and the presumptive test for *B. coli* daily, or at frequent intervals. Of course, he will usually make some errors at first, as is perfectly natural, but within a few weeks he can, by study and application, have an accurate working knowledge of the principles of water bacteriology. As his experience and training broaden, the superintendent can take up the more complex procedures of bacteriology, including microscopical work and the study of fresh water biology and related subjects. Such studies, however, are largely matters of personal ambition with the individual, and while very desirable, are not absolutely necessary for securing plant control and producing pure water.

#### BREAKING MANHOLE COVERS.

In 1915 the city of Philadelphia took over the work of replacing sewer castings directly and has thus been in a position to give more efficient attention to this important feature of sewer maintenance work. According to the report of the Bureau of Highways for 1916, manhole frames and covers and drop inlet grates are being constantly put out of commission by heavy motor trucks driven over them at high speed. The cost of placing 473,688 pounds of castings last year amounted to \$11,571.20, or 2.44 cents per pound. An average of 1,579 pounds of sewer castings was handled daily. If this work had still been performed by contract, it would have been impossible to give the prompt and exact attention required to avoid the possibility of accidents and to reduce the number of suits brought against the city for injuries to pedestrians stepping into open manholes or sewer inlets. The city has had to replace castings several times in the same location, owing to breakage by traffic, and appreciates that a change must be made in the design of manholes and inlet tops to prevent such breakage.

#### TOURIST TRAVEL CENSUS.

Many statements are made by highway authorities, by local advertising organizations and others, some of them more or less highly colored, concerning the amount of tourist travel which enters or passes through the several states and the amounts of money brought into the states thereby, sometimes with a view to attracting further travel and in other cases as an argument for the expenditure of additional funds in maintaining or further developing the highway systems. The state highway department of Colorado last year endeavored to make an actual census of the automobile tourist travel in the more frequented portions of that state by having distributed

in Denver, Colorado Springs and Pueblo a series of questions that each tourist was asked to answer. These questions were: 1—How long do you expect to remain in Colorado? 2—What car are you driving? 3—How many in party? 4—What does it cost your party per day? 5—What is your opinion of Colorado roads? Have you any complaint, criticism or suggestion? 6—Please give name and home address. While the number of replies received was comparatively small, it was estimated from these that the average number of passengers per car was four, that the average time spent in the state was 28.6 days, the average expenditure per person per day was \$3.30 and the average expenditure per person during stay in state was \$94.38. From these and other reports it was estimated that the total number of cars visiting Colorado during 1916 were 26,500, the number of passengers 106,000 and the total amount expended in the state \$10,004,280.

#### WATER SERVICE CONNECTIONS

##### Galvanized Iron and Lead in the North Central States— Comparison of Installation and Maintenance Costs and of Life.

In the design and construction of waterworks, little attention seems to be given to service connections. Altho they are an important part of the water system, they are apparently considered as a detail to be settled on after construction. There is a great diversity of opinion and practice in different parts of the country in regard to them, but generally those smaller than 3-inch are made of either plain iron or steel, galvanized iron, lead, lead-lined, or cement-lined.

The use of plain iron or steel, lead-lined and cement-lined is very uncommon in Minnesota, while galvanized iron and lead are widely and commonly used. Only the two latter, therefore, are considered in the paper.

In determining the factors that influence a choice of materials for water service connections, we may assume that the material to be used will be that which represents the lowest cost during the life of the service, taking into consideration not only the original cost, but also interest on the investment, and cost of maintenance and repairs.

The elements of cost entering into the installation are labor and material, the former consisting of the necessary common labor for excavation and skilled labor to make up the service connection, in both shop and street. The materials include the brass goods for controlling the supply at the main and near the curb and the service pipe itself, together with the stop or valve boxes.

The cost of delivering the material and the overhead expense for supervision and accounting must also be considered, but no matter what the material used may be, the labor cost, superintendence, use of tools and overhead charges in installing the average connection are practically the same. The brass goods and the stop boxes cost the same in either case, so that the choice of materials for service connections depends, when considered on the first cost basis only, upon the cost of the material in the service pipe itself. There may be an exception to this in cities where chemical elements in the water are such as to attack the lead and cause poisoning, in which case there is no choice.

In considering the life of service pipes, the various waterworks committees investigating this phase of waterworks construction have made an effort to determine

\*From a paper by Garrett O. House, Gen'l Supt., Bureau of Water, St. Paul, Minn., before the Minnesota Surveyors' and Engineers' Society.

the number of years that elapse before a service pipe begins to give trouble, as well as the number of years a service pipe is really serviceable. These committees have put the life of galvanized service pipe at 20 years and of lead at 35 years; and have concluded that the galvanized will ordinarily begin to give trouble after 15 years of service and the lead after 10 years. This seems to be the experience in New England, but in the north central states results have been more in favor of the lead pipe.

Trouble may be due to several causes. In the installation of any service, skilled labor is necessary and all materials are carefully inspected. But imperfections in material or workmanship have been found to be responsible for much of the trouble experienced with any kind of services during the first ten years after their installation. Trouble may be due also to breaks from settlement, electrolysis or freezing. Natural deterioration will sooner or later cause trouble; the time when this deterioration has advanced to a point where leaks are discovered depends on the perfection of the galvanizing in case of the iron pipe and the character of the soil in the case of the lead pipe.

For the purpose of comparison, we may assume, from experience in the north central states, that for a  $\frac{3}{4}$ -inch service pipe 50 feet long the cost for a complete lead pipe installation is \$35 and for a galvanized iron pipe \$25, and that the life of the lead pipe is 35 years and of the galvanized iron pipe  $17\frac{1}{2}$  years. We can then determine the cost during the life of the pipe and the annual depreciation and interest. The depreciation on lead pipe would be \$1 per year and on the galvanized iron \$1.43 per year; the interest on the lead service would be 90 cents a year and on the galvanized iron service 66 cents, a total cost of \$1.90 per year for the lead and \$2.09 for the galvanized. By applying prices of labor and materials in any locality, the comparative costs can be determined readily.

In the matter of repairs, it is borne out in the experience of every one who has installed and maintained lead and galvanized iron that when deterioration of galvanized iron pipe has reached the point where it becomes defective, the recurrence of leaks is frequent, requiring expensive repairs until the time the pipe has to be replaced.

In the case of lead pipe, repairs on account of natural deterioration seldom have to be made for the first 20 years of the life of the service, and in many cases we have found lead service pipes in perfect condition at the end of 25 years' service.

In 1913, '14, '15 and '16 the cost of maintaining and repairing service connections in St. Paul was 10 cents per connection per year, which included inspection and repairs to stop boxes and thawing service pipes. These figures refer to lead services, since no other kinds are used for services under 2 inches.

There are four general methods of charging for service connections. These are:

1. The waterworks department installs the service connection complete from main to building and considers the expense as a part of distribution system investment.
2. The department makes the taps in the main, charging the owner of the premises supplied the cost therefor, and authorizing a licensed plumber to install the balance of the service connection under the supervision of the waterworks at the expense of the property owner.
3. The department installs the service from the main to the property line at the expense of the owner, and authorizes a licensed plumber to complete the service into the building under prescribed rules and regulations.

4. The department makes the entire installation, charging the cost to the owner.

The second and third methods are the most common. The third method is used in St. Paul, and experience has shown that the department will usually do better work than an ordinary plumber; the city also, as a rule, purchases better materials and does the work at a lower price.

At present, in St. Paul, the water department makes all repairs to water service connections at the expense of the owner, the actual cost being charged therefor. In the light of experience in St. Paul, this rule should be changed so as to provide for the maintenance and repairs by and at the expense of the Bureau of Water for a period of time representing the reasonable life of the service pipe.

The regulations of the Department of Public Works in St. Paul, which has exclusive jurisdiction over all public streets, provide that no unlicensed person shall make any excavation in the street. If the owner of premises is not permitted by the Department of Public Works to make any excavation in the street and is not permitted by the Bureau of Water to make any repairs to the water service connection, and, further, if the Bureau of Water installs the water service connection, the owner has very little say about it and, it would seem, cannot be held responsible for other than natural deterioration of the service pipe which should be guaranteed to him for a reasonable life.

The repairs which are usually necessary to be made to water service connections of the smaller sizes when installed, either of lead or galvanized iron pipe, are due to imperfect workmanship or materials, or to settlements near the pipe on account of other excavations, or to freezing or electrolysis; for none of which can the owner be held responsible.

#### KEEP UP ROAD BUILDING.

There have been a few discussions, very few indeed considering the general condition of public works, of the advisability of stopping the construction of improved roads now under contract. There is no good reason for any such closing down of work. It is true that prices of all materials have risen since these contracts were made, but engineers are quite generally recommending a moderate increase in contract prices to meet this unforeseen increased expense without putting any burden on the taxpayer.

The labor situation is much more difficult than the material situation on many contracts, but it can be met by a simple, inexpensive remedy in most cases. This is merely to extend the time limit for the completion of the work. In a few months the army draft will have been made and the nation's industries will have become adjusted to war conditions. During this transition period labor will be scarce, transportation disorganized and conditions such that no contractor suffering from them can be equitably held to time limits agreed upon when there was little probability of war. If the contractor is allowed to proceed slowly during this period, with such labor as he can obtain at reasonable prices and such materials as he can persuade the railways to deliver, and is not required to speed up the work until conditions become settled again, the work will be carried on most economically and the only way in which the public will suffer will be through a delay of a few months in the completion of the improvement. This temporary inconvenience is of no importance compared with that following the complete stopping of construction by abandoning contracts or forcing contractors into bankruptcy by insistence on time limits impossible to meet now.

*American Highway Association.*



# Municipal Journal

Published Weekly at  
243 West 39th Street  
by

Municipal Journal and Engineer, Inc.

S. W. HUME, President  
J. T. MORRIS, Treas. and Mgr. A. PRESCOTT FOLWELL, Sec'y

A. PRESCOTT FOLWELL, Editor  
W. A. HARDENBERGH and SIMON BARR, Assistant Editors

Telephone, 9591 Bryant, New York  
Western Office, Monadnock Block, Chicago

## Subscription Rates.

United States and possessions, Mexico and Cuba.....\$3.00 per year  
All other countries..... 4.00 per year  
Entered as second-class matter, January 3, 1906, at the Post Office at  
New York, N. Y., under the Act of Congress of March 3, 1879.

## Change of Address.

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

## Contributed Articles and Reports.

*Contributions suitable for this paper, either in the form of special articles or as letters discussing municipal matters, are invited and paid for.*

*City officials and civic organizations are particularly requested to send Municipal Journal regularly their annual and special reports.*

## Information Bureau.

*Municipal Journal's Information Bureau, developed by twenty-one years' research and practical experience in its special field, is at the command of our subscribers at all times and without charge.*

## USE OF LOCAL MATERIAL.

Some months ago we called attention to the possibility of reducing road costs in many instances by searching out and using suitable local material instead of importing material because it was less trouble. The same advice has even more weight now, since in addition to the reduction of cost, this use of local material will lessen the tax on transportation facilities, which has become a patriotic duty of all citizens. In fact, it is quite possible that the President may exercise the power vested in him of excluding such materials from rail transportation, or greatly limiting the amount transported, in order to give precedence to food, coal and munitions.

That there probably are deposits of stone, gravel, sand and other local materials which could be used for road work and other construction work, but are not, is still further suggested by the fact that similar possibilities have been overlooked along many other lines, which fact is being discovered now that many foreign supplies are cut off by the war. Secretary Redfield, of the Department of Commerce, cited a number of such instances the other day, saying that "The amazing thing about the United States is that, for an alert people, we let things of the largest importance go by unseen." Among these were fish of several kinds which other nations use for food, but which had never been so used in this country, although they are now being used by the thousands of tons. The osage orange, which had little or no commercial value, is now being used at the rate of 800,000 pounds a month for producing a good yellow dye—a use which had never been suggested until the shortage of German dyes. In dyeing seal skins, oak galls are used which were imported from Turkey at \$50 a ton, but which are difficult to obtain at present; but

about a month ago on a large reservation in California were found enormous quantities of these which can be shoveled up off the ground, and are now being used in place of the Turkish article. The German supply of potash having been cut off, it was discovered that we could make this in the United States from kelp, and one sale of 10,000 tons of potash so made was reported a few weeks ago.

These are only a few instances of overlooked opportunities in various lines and it would be only natural that engineers and contractors on road work should be similarly short-sighted in bringing from a distance materials for which equally good local substitutes might be found by careful investigation. New York State, and to possibly a less extent some of the other states, have made systematic investigations of quarries, gravel pits and other sources of road material in all sections of the state, testing these to determine their suitability and thus having on record the locations of all such materials in the state, so that that nearest to any proposed piece of road work is known at once without further investigation. Canada has been carrying on similar work for the last two or three years.

It is not, of course, to be advised that the nearest gravel pit or the nearest quarry should always be resorted to for any road work in which these materials are to be used, but judgment should be exercised in selecting the best that can be obtained within reasonable distance for transportation by motor truck or other conveyance using the highways, rather than by the over-burdened railways.

## CONTINUING PUBLIC WORK.

We publish below a letter which takes exception to editorials published by Municipal Journal and others recently, the aim of which was to persuade municipalities and other public bodies to continue public work in spite of the higher cost of materials and of labor. In opening this letter, Mr. De Lay refers to "enclosed clippings," which clippings consist of an article by Howard S. Coffin, of the Advisory Commission of the Council of National Defence, which appeared quite generally in the daily papers throughout the country about April 20; an editorial from Municipal Journal which appeared in the issue of April 26, and a resolution of the trustees of the Ohio Good Roads Federation.

Editor Municipal Journal,  
New York City, N. Y.

Dear Sir:

I from time to time receive and notice communications of the same general tenor of the enclosed clippings, all being designed to create a sentiment against the very marked tendency to cease public improvements this year and to give the impression that this tendency is a form of war hysteresis and an unpatriotic manifestation with all.

As a matter of fact the tendency has no "war scare" whatever as its basis, but is a protest against and an avoidance of the extortions which the producers of the materials of public improvement are at the present time able and willing to practice.

While the engineering profession is probably the most immediate and painful sufferer from this condition, I am not disposed to blame the material producers for "getting theirs while the getting is good," and a sense of fair play leads me to protest against an attempt to brand as unpatriotic those who are able to avoid paying the present prices of materials of construction.

Any one who could materially postpone, at the present time, the consumption of wheat or potatoes would undoubtedly be hailed as a patriot, and I see no reason for reproving those who can and are doing the same thing to the consumption of cement and steel.

Yours very truly,

THEO. S. DeLAY,  
Civil Engineer,

Mr. De Lay, to our mind, entirely misunderstands the ideas and sentiments of those who are advocating continuance of public work and also those who are advising concerning the food problem, when he classifies economy in the use of wheat with economy in the use of cement. The chief basis for advocating cutting down the use of wheat to a minimum is that the supply is limited and that all that there is or can possibly be secured in the world is not sufficient to adequately feed those who will need it until next year's crop is available. On the other hand, there is no scarcity of material from which to make cement, nor is there any considerable scarcity of the manufactured product, nor has the price of such product, we believe, been raised to a greater extent than that of labor and most commodities. In the case of wheat, general use is demanded for the maintenance of life and the greatest possible general economy in its use will work hardships on no one; while in the case of cement, abstaining from the use of that would result in throwing out of employment men engaged in its manufacture, of retiring from circulation the money which would be paid for it and which would be passed on by the manufacturers into other lines of commerce.

So long as the price of steel is two or three times as great as before the war, it is perhaps as well to limit the use of this as much as possible, there being here the further argument that steel also is required for war purposes by this government and by the allies in as large quantities as all of the mills of the country can possibly turn it out. If we eliminate steel, however, there are practically none of the other materials which are employed in public works, the free use of which will at all interfere with the prosecution of the war by either this country or the allies. Stone, cement, asphalt and other bituminous products, are the principal materials used in road work and in concrete work of all kinds; and cement and vitrified pipe are the principal materials used in sewer work. In water works, cast iron pipe is abnormally high, and it would be well to limit the use of that to the amounts which are required at once; but the cost is the only objection to using this, and while it is a serious one, we believe that there are many instances where failure to lay the required lines would be even more serious.

Prices of practically all materials are higher than they have been in the past, but, as we have endeavored to show in previous issues, labor, grains and everything which is given in exchange for such materials (except the medium of exchange, money) have advanced almost, if not quite, equally, and from that point of view the cost of many public works would be no higher than it has been in the past. In addition to this, we have it as the opinion of many men who are most competent to judge that it is the patriotic duty of Americans to continue business along all necessary lines as nearly normal as possible, cutting out only the luxuries and unnecessary expenditures, on which the American people has in the past spent so large a part of its earnings that the saving so effected will be ample for the prosecution of the war.

INSPECTING ROAD MATERIALS.

During the past two years the Philadelphia Bureau of Highways has inspected, in the manufacturers' plants, all materials entering into the construction and maintenance of the streets and roads in addition to conducting the regular laboratory and state tests and inspections. Inspectors were assigned to each of the seven plants supplying bituminous materials to the city to regulate and control the mixes and make regular tests upon the materials entering therein, as well as upon the final mixture. These inspectors sent representative samples of sheet asphalt wearing surface, bituminous concrete binders and asphaltic cements to the laboratory for analysis.

Special attention was given to the mineral aggregates entering into concrete for base construction. When slag was to be used, the inspector was required to weigh a cubic foot of slag and submit the result of this weighing, with a sample of the material, to the laboratory before using it upon the street. At the laboratory the material was checked as to weight and examined as to grading and texture. Sievings and briquette tests were made upon the sands used, and the cement used in each contract was subjected to the regulation tests. Brick were tested at the city laboratory, but at times during 1916 when the manufacturer had sufficient brick ready for shipment, an inspector was detailed directly to the plant to inspect the shipment and conduct rattler tests on each carload prior to shipment. The results thus obtained were checked from time to time by rattler tests conducted in the city laboratory.

Inspection at wood block plants consisted of testing the treating oil, thorough inspection of lumber prior to treating, and checking and regulating the treating process, including, of course, the amount of oil used in the treatment. Check tests also were made in the city laboratory when the blocks had been received.

Numerous tests were made on granite from different paving block quarries and it was proposed that in 1917 the inspection and testing of this material be further developed, complete sets of tests of granite from each of the quarries being made, these including tests for compression, hardness, toughness and the French coefficient of wear.

CORONA ELEVATED RAILROADS.

Editor, Municipal Journal:  
Dear Sir: Will you please correct an item in the May 17th issue concerning the Corona elevated railroad? The writer was in charge of the work mentioned as assistant engineer and assistant division engineer under Mr. J. H. Myers from the beginning of the work until January 1, 1917. A correct statement of the facts will be found in the Public Service Record for May, 1917.  
Yours truly,  
A. M. WYMAN.

BITUMINOUS RESURFACING COSTS.

In Cambridge, Mass., considerable bituminous surfacing work is done by city forces. For the fiscal year ending March, 1916, according to the annual report of L. M. Hastings, city engineer, this resurfacing work cost as follows:

Itemized Cost of Resurfacing in Cambridge, Mass.									
Street	Labor	Teaming	Steam Roller	Crushed Stone	Binder	Total	Square Yards	Cost per Yd. Estimated	
Cedar .....	\$273.50	\$150.50	\$112.00	\$636.73	\$1,316.25	\$2,488.98	3,874.00	\$0.642	
Chestnut .....	615.31	88.50	119.00	699.24	1,260.00	2,782.05	3,888.60	.716	
Dover .....	63.75	77.00	35.00	143.95	260.00	579.70	887.00	.655	
Forest .....	77.50	66.00	84.00	362.80	426.80	1,017.10	935.00	1.09	
Garden .....	480.00	319.50	147.00	1,330.40	1,573.00	3,849.90	3,666.00	1.05	
Hampshire .....	98.75	17.25	35.00	147.75	135.44	434.19	1,009.00	.434	
Healey .....	82.50	68.00	56.00	346.50	321.52	874.52	1,150.00	.76	
Huron Ave. ....	111.25	129.50	87.50	728.50	.....	1,056.75	2,177.00	.481	
Richdale Ave. ....	175.00	129.25	147.00	861.10	596.00	1,908.35	3,180.00	.60	
Ware .....	60.00	89.50	21.00	129.25	286.00	585.75	1,635.00	.358	
Windsor .....	308.13	25.75	63.87	890.38	1,288.00	2,576.13	3,335.00	.772	
Windsor .....	769.44	38.00	119.00	1,634.33	1,192.88	3,753.65	6,324.00	.593	
Totals .....	\$3,115.13	\$1,198.75	\$1,026.37	\$7,910.93	\$2,655.89	\$21,907.07	32,051.60	\$0.683	



## The WEEK'S NEWS

Highway Progress in California, Arkansas and Louisiana—Steel Contracts in Boston—Health Surveys in Laramie and Michigan—Investigate Spread of Rabies—Wanaque Project Delayed by Litigation—Joplin Defeats City Light Plant Plan—Cleaning Up Vice in Army Cities—Dallas Charter Election Test Dropped—Duluth on Cash Basis—Increasing City Employees' Wages in New York—Housing Legislation in Detroit and Michigan—Meridian Votes for City Ice Plant.

### ROADS AND PAVEMENTS

#### Exhaustive Road Tests.

Davis, Cal.—What is claimed to be the most complete series of tests ever made on the Pacific Coast relative to the tractive force necessary to move a given load over different types of roads, is being made here by professor J. B. Davidson of the agricultural engineering department of the university of California. Present and assisting professor Davidson are Charles H. Sweetser, district engineer United States Office of Public Roads and Rural Engineering; W. H. Lynch, senior highway engineer of the same office; L. J. Fletcher, assistant to professor Davidson, and Ben Blow, manager of the Good Roads Bureau of the California State Automobile Association. The testing instrument employed, known as the Iowa dynamometer, was designed by professor Davidson while connected with the Iowa Agricultural College, and records the force, measured in pounds, necessary to move a loaded wagon over various road surfaces. Tests were made on dirt roads, dusty roads, muddy roads and roads of water-bound macadam, oil macadam, loose gravel, packed gravel, unsurfaced concrete, concrete surfaced with three-eighth-inch skin, top of asphaltic oil and screenings, and one and one-half-inch Topeka top on concrete. The first results already show that the hard surfaced roads require less tractive force to move a heavily loaded wagon than the softer surfaced types of road. In making these tests, great care was employed to secure level roads, temperatures were accurately recorded, and wind pressure equalized by balancing tests. When complete charts and computations are arrived at, the recorded results will be published by the Good Roads Bureau of the California State Automobile Association. A further series of tests will be made in the fall, when rains have varied the character of the road surface to supply a basis for comparison and to illustrate the high cost of mud.

#### Builds Road to New Training Camp.

Little Rock, Ark.—The state highway commission has set apart \$125,000 out of an emergency fund of \$200,000, for the purpose of building a road from Argenta to the new military training camp. The survey is in progress, and the contract will be awarded July 2. The commission has also called a convention for July 24-26 at Eureka Springs, for the purpose of considering plans for a highway from Joplin, Mo., to New Orleans. Delegates are invited from counties and cities in Arkansas, Louisiana and Missouri.

#### Begin on "Gateway" Project.

Schenectady, N. Y.—The "Great Western Gateway" project has been advanced another step as the result of the recent signing of the necessary legislation by governor Whitman. The bill appropriates \$15,000 for the preparation of plans and specifications for a concrete bridge over the Mohawk, which is expected to be built at some future time, and these plans and specifications are to be completed by the state engineer on or before December 1, 1917, and a copy furnished to the city. The bill appropriates no money other than the \$15,000. In case the plan may be pushed to completion, it limits what proportion of the entire cost of bridge and approaches the state may bear to \$750,000. Not more than \$250,000 of this amount, it states, "shall be hereafter appropriated from the general fund." The new law directs that the state engineer's plans for the bridge shall provide for a driveway 40 feet in width and two concrete sidewalks, each six feet wide. It will be designed to carry

two electric railway tracks and be of sufficient strength for the use of modern electric cars. The structure will be of the deck type and built of concrete properly reinforced. It will cross the channel of the barge canal in two spans of approximately 100 feet in the clear. All other spans, including the spans of the viaduct across the islands, will be about seventy feet in the clear. The bridge will be high enough above the waters of the canalized river to allow the passage beneath of all barges and tugs. At either end of the bridge will be an approach, the one on the Schenectady side to be about 100 feet long and of parked design. The approach on the Scotia side will be of the same design and construction as the bridge itself. The new bridge will take the place of the present toll bridge across the river.

#### Contractors to Set Own Time Limit.

Boston, Mass.—The city has adopted a new plan for paving contracts. It is a time arrangement, by which the contractor fixes the time in which the work must be completed and consents to a penalty of \$100 a day for every additional day that the work is unfinished. Such a plan has worked well with the Boston Transit Commission, and the public works department hopes to be able to make much better progress with Boston street work than has ever been made on the old contract form, which fixed the day of the completion of the contract, but without penalty. The first of the new time contracts is taken by Coleman Brothers for laying sheet asphalt on a number of streets at a cost of \$75,063. The work must be done by Nov. 15. The mayor recently called to his office the contractors who have city work unfinished from last year. He told them that they must be more careful in the future, also that the work on hand, left over from last year, must be completed with haste. The contractors replied that the labor problem had been serious since the frost left the ground and that it had been difficult to secure supplies.

#### Railroads vs. Highways.

Baton Rouge, La.—The steam railroad and its attitude toward good roads has aroused public interest in a fight in which Louisiana trunk lines were asking a 15 per cent. increase in rates. The cause of good roads was upheld by Duncan Buie, state highway engineer, and W. E. Anderson, general manager of the Tioga Gravel Co., represented the road material dealers. The case is before the state railroad commission. A year ago the Louisiana trunk lines entered a verbal agreement with good roads builders to do everything within their power to assist in the promotion of the public highways. Mr. Buie was present when the agreement was made. The agreement has been broken. Railroads blame the car shortage, while complainants say that empties are hauled by the hundreds through the front yards of gravel pits and sent on across the state line without regard to Louisiana's needs. These cars, if used for the transportation of gravel to road works would make possible, it is said, the continuance of road construction. They are coal cars, or gondolas. Good roads building has been seriously interrupted in Louisiana during the past six months entirely on account of alleged indifference on the part of the carriers. When recently trunk lines combined for a 15 per cent. increase of freight rates, which included road building materials, predicated on the increasing cost of operation, etc., the state highway engineer went to Baton Rouge to battle against the advance in so far as commodities utilized by his department are concerned. Approximately \$9,000,000 has been raised in bond issues by parish police juries, state tax-

ation and federal appropriations for road work predicated on the agreements entered into, and since broken by the railroads. Last fall many miles of roadways were ready for surfacing, but lack of materials, owing to failure of the roads to furnish cars, has left the roads unsurfaced and unprotected against winter and spring rains. There is no good excuse or the attitude of the railroads toward good roads construction in Louisiana," declared Mr. Buie. "It is due entirely to a natural enmity which pops out every time anything concerning road building is mentioned, I believe the railroads should be held to their agreements to furnish cars at the old rates—and if they are disciplined they will pretty soon find the cars." Mr. Alderson takes the position that the best way to handle the railroads is to give them what they want and then force them to come across. He believes that the 15 per cent. increased freight rate on gravel would be a good investment if it would serve to restore the car movement in Louisiana. He told the railroad commission that unless the people throughout Louisiana, the newspapers and the railroad commission take the car situation actively in hand that the good roads movement in this state will be seriously set back and the loss in the aggregate, through delay and deterioration, will be greater than the increase demanded by the roads. In view of the stand being taken by the highway engineer the commission adopted a resolution formally requesting all railroads operating in Louisiana to furnish empty cars for shipment in this state of good roads materials. It is the opinion of the commission that "this action should be taken for the general welfare of the state."

## SEWERAGE AND SANITATION

### Sanitary Survey by Federal Officials.

Laramie, Wyo.—Municipal control of the dairies with compulsory pasteurization of milk was urged by Dr. Wynne, one of the government sanitary officers, who recently reported to the council on the sanitary conditions of the city. Dr. Wynne declared that sanitary conditions in Laramie were apparently good. The report stated that the city is to be congratulated on its supply and the excellent quality of water. It was recommended that the city springs should be protected by an unclimbable fence and the water be entirely covered from the springs to the consumer. The use of water which had passed through the fish hatchery was advised against, or if this was necessary, installation of a disinfecting apparatus with which to treat the water with liquid chlorine. A careful survey of the city by the government experts shows that there are 1,180 dwelling places in Laramie exclusive of those in the business section of the city. Of these, 683 are connected with the sanitary sewer and there are three cesspools in the city. There are five outdoor closets connected with the sewer and 489 that are not connected. There are 461 of these outdoor closets which are accessible to the sewer. It was urged that the city ordinance, making it compulsory to connect with the sanitary sewer where possible, be enforced.

### Rabies Spreading Along Travel Routes.

New York, N. Y.—Careful studies by the health department of all cases of rabies occurring in the city indicate that much of this infection is brought into the city from out of town. According to Dr. Bolduan, in this respect conditions are similar to those relating to typhoid fever some years ago. The unusual demand for anti-rabic treatment, from cities and towns along the routes of travel leading into New York city, prompted the chief of the health department's anti-rabic laboratory to collect and analyze the data at hand as to the evidence of rabies in the territory around the city, and to study, if possible, the progression of the infection. The study indicates that the disease appears to be approaching New York city along the railroad line routes, particularly that of the New Haven railroad and the results will lead to a much more drastic enforcement of the dog-muzzling ordinance and health officers in neighboring states are advised to take similar action. From the data it is observed that the time intervals between outbreaks along the routes are such as to conform with present

ideas of the incubation period of canine rabies. Buffalo is reported to have been a focus for rabies for a year, and it has been spreading to nearby towns. Anti-rabic treatment for 56 cases of dog bite was sent to Buffalo in 1916 and orders continue to come in. There are also a number of rabies foci in towns located close together in northern New Jersey. The health department has sent out to health officers a circular letter asking for further information.

### Begin Work on Sewer Improvements.

Winston-Salem, N. C.—The contractors, who have been awarded the contracts for installation of about forty miles of sewer extension in the city, have begun now with full forces. The work will be pushed as rapidly as possible, and it is hoped that the entire extension will be available for use within the next three months. The contracts call for the construction of something over forty miles of mains within about 275 working days. Four contractors are engaged in the construction. Supt. Joseph Firth, of the department of public work, is arranging to carry the construction of water mains along with the sewer laying work, the bonds providing for the installation of about fifteen miles of permanent water mains of large size, and many miles of the smaller cross laterals for general distribution of water through the territory affected.

### State-Wide Tuberculosis Survey.

Lansing, Mich.—There has recently been published the report of the tuberculosis survey made by the state board of health during the twelve months from Oct. 1, 1915, to Oct. 1, 1916. The first chapter of the report is a brief history of the organization and early work of the state board in its efforts to arouse the attention of the people to the communicability of tuberculosis. The report gives a general account of the activities of the investigation written by Arnold Mulder, publicity agent of the survey, a summary of the findings of the housing expert, Robert E. Todd, and the medical history and tabulation of a series of cases examined and the conclusions deduced therefrom by Dr. V. C. Vaughan, Jr., special tuberculosis expert. The final chapter contains the recommendations of the state board for the continuation of effective work against the disease. More than half of the state has been covered by the survey as reported in the publication, the work continuing until the whole state survey is completed. The Anti-Tuberculosis Society of the state was organized in 1908 and it was the splendid work of this organization in combatting the disease, which costs Michigan each year about 2,500 lives and millions of dollars annually, which convinced the legislature in 1915 to provide for this survey. A meeting was held by the state health board in Detroit on May 20, 1915, and another by the society in Grand Rapids in which several hundred persons co-operated with suggestions for methods of making the survey. The state board, in making the investigation, did not confine its work to a merely scientific census but worked to benefit immediately the many victims of the disease found.

The general purpose of the survey is summarized as follows: (1) To find by actual physical examination every case of tuberculosis that can possibly be discovered in every community; (2) to give every person so discovered and the family all the information necessary to make an effective fight for health; and (3) to arouse each community as much as possible during the limited time at command to a realization of the necessity of bending every local energy to an effort to cope with the disease. Each county was given a survey for a period of one to three weeks, depending on population. All available media for publicity and all local forces for organization and education were utilized. Two nurses and the publicity agent first enlisted the co-operation of local newspapers and societies and then free clinics were held. The total population (1910 census) of the 38 counties covered in the first twelve months of the work was 1,319,283. A total of 11,528 persons were examined in the free public clinics—of these 2,914 were diagnosed as positive cases, 2,231 as "suspicious," or likely to be in the early stages, 404 as "arrested" cases, or those in which tuberculosis had once been present, and 5,924 as negative cases. The county



surveys indicate therefore that of the persons examined, 44.6 per cent were found either to have tuberculosis or to be so seriously threatened that they required the attention of a physician. It must be observed that in these figures, most of those examined were selected by physicians or by others and urged to come—others because they were not well or because of a history of the disease in the family. In every county the disease was found more prevalent than was popularly supposed. The value of the survey is best illustrated by the fact that of the total number of positive cases, only 2.2 per cent had been previously reported to the state board of health—the other 97.8 per cent were "new" cases. Every one of the homes of 3,000 positive and suspicious cases was visited and in this way about 15,000 persons who had the disease or who were directly exposed were educated in the methods of cure and prevention. City councils, supervisors and hundreds of thousands of school children were reached and scores of thousands of columns were printed in the newspapers.

Following the survey, four full-time health officers and eight visiting nurses have been appointed in Michigan cities; in eighteen counties agitation has been begun for the erection of sanitoriums and St. Clair County voted \$15,000 for one; in eight places open-air schools have been provided and in eight local physicians have organized free weekly clinics. Special studies were made of tuberculosis among school children and 1,114 persons between 5 and 19 were found to be positive cases. In the 38 counties, 55.2 of all positive cases were between 20 and 49, inclusive, or in the productive period of life. The disease in jails and penitentiaries in the state was also studied. Altogether, the number of advanced cases totaled 6.8 per cent; moderately advanced, 27.6 per cent; incipient, 52.6; arrested, 12.9; not stated, 0.5 per cent. A study of housing conditions, which are an important factor in the disease, was also made—and bad living conditions were found in a number of cities. A health pageant was held in Detroit in connection with the survey. Altogether, from June 1, 1915, to October 1, 1916, \$51,694.75 was spent. The state board, as a result of the survey, recommends legislation dividing the state into health districts in charge of efficient health departments financed by local governments. More funds are necessary, it is urged, Michigan standing thirty-third among 48 states in the per capita expenditures for health work. Two more state sanitoriums are needed. The report was compiled by Dr. John L. Burkart, secretary of the state board of health.

## WATER SUPPLY

### Water Rates Increased 25 Per Cent.

Ashtabula, O.—An ordinance fixing a new schedule of rates for the Ashtabula Water Supply Company has become effective. The new schedule means a raise in the price of water to the average consumer of about 5 cents per thousand gallons. The flat rate is not changed, the increase being applicable only to the meter rates, but as the flat rate system is practically extinct the increase affects practically all consumers. The meter rental is raised from \$1.50 to \$2.00. This, however, does not, in the long run, make any difference, since the meter becomes the property of the user after enough rent has been paid to cover its cost. The minimum rate is raised from \$5 to \$6 per year. This will affect about 1,000 consumers, according to the estimate of the water company. A feature, however, that in some degree offsets the raise, is the fact that under the new rate ordinance, the hydrant rental paid by the city is materially cut down, and will produce a saving for the city of about \$1,800 a year. This rental comes from the safety fund. The water company asked for an increase sufficient to advance the income about \$16,000. The council cut about \$7,000 from this increase, so that the ordinance will give the water people an increased income of about \$9,000 per year. Large items of increased expense are given by the water company as the reason for the requested raise, including the following: Increase of coal at present prices \$2.45 on 4,300 tons, \$10,535; estimated further increase on coal, \$1,000; estimated increase in wages, \$2,000; increase in oil, filtration supplies,

repairs, general supplies, etc., \$1,500; increased cost of connections over former cost of same, \$1,000. Total, \$16,035. A statement recently submitted by the water company to the public utilities commission, declared that since the present company had been organized, it had paid but one dividend of one per cent. on its common stock, in addition to paying the interest on bonds and the required dividend on the preferred stock. The new rate ordinance will run for a period of five years. The new meter rates will be as follows: When the daily consumption does not exceed 3,000 gallons, 25 cents per 1,000 gallons; 3,000 gallons to 5,000 gallons, 23 cents per 1,000 gallons; 5,000 gallons to 8,000 gallons, 19 cents per 1,000 gallons; 8,000 to 10,000 gallons, 15 cents per 1,000 gallons; above 10,000 gallons, 12 cents per 1,000 gallons; above 15,000 gallons, special rates.

### Preparation of Water Supply for Army.

San Diego, Cal.—The health department has received the following communication from the state board of health signed by C. G. Gillespie, director of the bureau of sanitary engineering: "While the San Diego supply easily surpasses any other surface source in California in the amount of laboratory and field supervision given, we are anxious that it be placed in the rank of the best in the country. This is most imperative now by reason of the location of a large army cantonment in your midst. I believe that we shall insist upon chlorination of all water furnished to the troops. In addition, laboratory facilities should be hastened to enable your office to make daily analysis of samples collected on each individual supply, both before and after treatment. Occasionally the sampling should be done early in the day to check up night operation. Within a few weeks I plan to return to San Diego to devote entire attention to the water system. It is hoped that you will have prepared new forms and begun the more systematic collection of pertinent data by that time. I beg to report that we appreciate the steps along this line now undertaken and the good showing in the absence of *B. coli* with the present frequency of sampling."

### The Wanaque Litigation.

Newark, N. J.—The fight of the Society for the Establishment of Useful Manufactures of Paterson against the Wanaque watershed development again reached a new complicated phase when the Supreme Court at Trenton directed the issuance of an attachment in contempt against members of the North Jersey District Water Supply Commission and the Newark Board of Works and also allowed a writ of certiorari to review the contract entered into between the city of Newark and the water supply commission for the Wanaque project. In directing the contempt attachment, Justice Swayze intimated that imprisonment and not a mere fine might be the penalty in future cases of contempt. In applying to have the commissioners adjudged in contempt, the S. U. M. charged that the water commissioners and Newark officials entered the Wanaque contract in the face of a writ of certiorari obtained by the S. U. M. against the State Department of Conservation and Development. This writ was to review the action of the conservation department in giving to the water commission leave to develop the watershed, and it was claimed to act as a stay on any further proceedings in the watershed project. On May 24, however, the Board of Works and Mayor Raymond of Newark executed a contract with the wafer commission for the \$8,060,000 project at the watershed. The court inquired rather pointedly whether the execution of the contract did not operate automatically to increase the salaries of the members of the North Jersey Commission. An affirmative answer was given to this question. In accordance with the usual procedure in contempt cases, the members of the North Jersey Commission and Board of Works will be served with copies of interrogatories which they will be required to answer before a decision is reached on the question of contempt.

Trenton, N. J.—Litigation which may involve an attack on the plans to develop the Wanaque watershed, has been instituted in the court of chancery by the Weidmann Silk Dyeing Company of Paterson, in three suits directed against

Newark, Jersey City and the East Jersey, Montclair and Acquackanonk Water Companies. In both suits the Weidmann Company asks that the defendants be enjoined from "impounding, confining, retarding, diverting or in any wise interfering with, or hindering or changing the natural flow of the waters of the Passaic river or any tributary thereof, at any place or places above the premises of the complainant so as to in anywise hinder, interrupt or change the natural flow of said waters of said Passaic River to and past the said premises of the complainant." In the suit against Newark it is charged that the city is now diverting upwards of 50,000,000 gallons of water daily from points in the Pequannock watershed. Jersey City was alleged to be diverting more than 50,000,000 gallons daily from the Rockaway river at Boonton, and the East Jersey, Montclair and Acquackanonk water companies 23,000,000 gallons daily from the Passaic river at Little Falls. In each of the three bills it was set forth that the Weidmann Company has a plant worth \$1,000,000, which is valuable as a dye works or for other manufacturing purposes. It was charged that through the diversion of water a loss of \$10,000 a year is entailed upon the company and that if the diversion is increased the injuries to the company will be irreparable. The right of the company to the unrestricted flow of the river past its property was alleged to have been established by suits in the Supreme Court, in which judgments were obtained against all the defendants. These judgments as finally established after several years of litigation were as follows: Newark, \$9,590; Jersey City, \$21,503; East Jersey, Montclair and Acquackanonk Water Companies, \$22,212.

## STREET LIGHTING AND POWER

### Municipal Plant Proposition Defeated.

Joplin, Mo.—The lighting question remains unsettled, the voters in a special election defeating both the propositions, either to authorize the issuance of \$225,000 in bonds for the erection of a municipal light plant or the purchase of power from the Empire District Electric Company. The bond proposition received a majority, the vote being 1,178 for a municipal plant and 984 against, but lacked 263 of the necessary two-thirds. For the contractual proposition, 749 were in favor and 1,354 against. Only in four precincts did the contractual proposal receive a majority. Majorities against the bonds were cast in six districts. Whether the contractual proposition needed a majority or a majority of two-thirds is an undecided question. It had been supposed all along that only a majority was required, but E. F. Cameron, city attorney, declared he was not certain of this. "Settlement of the question," he said, "would require an investigation, because the law is not clear."

### Commission Orders Rate Reduction.

Portland, Ore.—An order has been issued by the public service commission at Salem, reducing the commercial lighting and heating rates of the Portland Railway, Light & Power Company between 5 and 10 per cent. In a previous order the commission reduced the residence lighting and commercial power rates of the company materially. The commission in both orders stated that it did not find the rates excessive, but owing to competition they were such that they would not ultimately produce the greatest use of the service by consumers or yield the greatest return to the company. The portion of the order fixing the rates reads: "For lighting and heating purposes in stores, offices, warehouses, shops, hotels and all other commercial and industrial premises, including apartment houses supplied under single contract, first 1,000 hours use per month of the consumers' demand will be at the primary rate. All consumption in excess of that of the primary rate will be at the secondary rate.

"Primary Rate—First 13 kilowatt hours or less, \$1; next 67 kilowatt hours, 7c per kwh.; next 100 kilowatt hours, 6c per kwh.; next 720 kilowatt hours, 5c per kwh.; excess over 900 kilowatt hours, 4c per kwh.

"Secondary Rate—First 600 kilowatt hours, 3c per kwh.; next 1,000 kilowatt hours, 2c per kwh.; next 2,000 kilowatt hours, 1½c per kwh.; excess over 3,600 kilowatt hours, 1c per kwh.

"A discount of 1 cent per kilowatt hour will be given on that portion of the consumption billed at 3c per kilowatt hour which is in excess of a total consumption of 600 kwh. A

discount of 5 per cent. will be given for payment within 10 days from the date of the bill.

"Minimum Charge—One dollar per month per kilowatt of all lighting equipment and of all heating, cooking and power equipment in excess of two kilowatts of rated capacity. No heating, cooking or power appliances will be considered in the determination of demand in the lighting rate, except insofar as it affects the minimum charge."

### Court Allows Use of Highways for Wires.

Hamilton, O.—The case of the board of county commissioners vs. The Ohio Gas & Electric Co. has been decided by judge Harlan against the commissioners. The commissioners enjoined the company from erecting poles and stringing wires on the county roads for conducting electricity for power purposes; but the court held that as the legislature had seen fit to grant the right to power companies to so use the public highways, and as the supreme court had found this law valid, the court has no authority to prevent such use of the highways. The statute requires that the lines shall be so constructed as not to incommode the public in the use of the highways. In the case the court found that no use had been made of the highways that would incommode the public in their use. The law only permits the use of the highways and does not permit the use of the streets of a city, and such power companies have no right to use the streets of a city unless they obtain specific authority to do so.

## FIRE AND POLICE

### Estimate Cost of Two Platoon System.

St. Paul, Minn.—A difference of \$165,000 exists in the estimates made by city firemen and commissioner McColl as to the cost of putting into operation the two-platoon system for the fire department. The firemen said it would cost about \$85,000 to install the two-platoon system. This amount would provide salaries for 101 new men, the firemen estimated. There are about 300 men in the department now. Insurance underwriters have asserted for fifteen years that the St. Paul fire department has been undermanned. The firemen estimated that each company would have twelve men, six on duty days and six nights. The underwriters say St. Paul should have seven men on duty days and nine nights, making a total of sixteen men in a company. There are thirty-three companies in the city. With twelve men in each company, the total fire-fighting force would be 528 men, and to these would be added forty men in the squad crews, making the total 568, an increase of 268 over the number now in the department. To add this number of men to the department would cost \$250,000, commissioner McColl said, including salaries of new officers needed to captain the fire crews on night and day shifts.

### Police Officials Help Clean Up Army Towns.

Washington, D. C.—The War Department has issued the following statement: "That there shall be no 'red light' in our new National Army is the determination of the Government, and with that object in view the War Department has been pursuing a vigorous campaign in the vicinity of the camps now in existence, as well as in the larger cities adjacent to our military establishments. The popular theory that our citizen soldiers have been hounded by a 'vice trust,' organized to vend their wares in the regions where troops are being mobilized, is without foundation. The people with whom the Government has been dealing mercilessly are scattered adventurers, gamblers, dramsellers, proprietors of vicious resorts which have sprung mushroom-like out of the ground like gypsy camps at county fairs. In addition to these, the regularly established districts in the larger towns have been investigated and forced to close on the shortest possible notice. In all cases the government has worked with the honest and able co-operation of municipal and local authorities. Chiefs of police throughout the country have been requested to give their attention to this phase of vice regulation, and the results vindicate the enthusiastic patriotism with which the authorities have carried out their trust. The tenderloins in the Texas cities—old fashioned red-light districts which up to a few weeks ago seemed as permanently planted in their towns as the city hall—have



withered over night or gone their way. El Paso, Fort Worth, Waco are now surprisingly free of the easy-money establishments. Farther north, St. Louis has closed the lid tight upon the objectionable centers. Mayor Bell of Indianapolis has been doing energetic and effective work in his own town and has cooperated in keeping undesirable resorts away from the environs of Fort Benjamin Harrison. San Francisco's tenderloin is also closed tight against the vice interests. The cleaning-up process has extended all the way to Plattsburgh, where the wandering undesirables have been told plainly to pack up and go. To organize this great protective movement has been a work of tremendous detail and has involved the notifying of many thousand police heads in every region which might touch upon the military establishments. Twenty-one thousand letters were circulated among police authorities. The press throughout the country has done invaluable service to the Government through the medium of special articles setting forth investigated facts and advising means of discouraging the sort of business which the War Department has determined to stamp out in the vicinity of cantonments and training camps. The work of Secretary Baker has been especially vigorous in this regard, as he has recognized from the first that healthy citizen soldiers could not be produced in unwholesome surroundings. He has not hesitated to inform laggard officials that unless his policy was followed out promptly the camp sites would be moved to other localities. It is safe to predict that the Government's big campaign of house cleaning will result in a far lower percentage of disease among our soldiers than now prevails in foreign military camps."

#### Suit Follows City Hall Cupola Fire.

New York, N. Y.—Believing that a case of negligence can be established against Charles Schlesinger, the contractor who was repairing the roof of the City Hall at the time the fire started which burned out the clock tower on May 11 last, corporation counsel Lamar Hardy has begun suit against him for \$25,000 damages, which is the estimated cost of restoring the tower. It was reported that one of Schlesinger's workmen was using a charcoal brazier, and that there was a quantity of loose charcoal nearby. Needing some further material, the workman is said to have left to go to the shop in the Bronx, neglecting to take proper care of the burning brazier. There was a high wind at the time which blew some of the red hot coals into the loose charcoal, it is declared.

## GOVERNMENT AND FINANCE

#### Merging of City and State Elections.

Salem, Ore.—Approximately 175 cities in the state will be affected by the constitutional amendment, passed by the people at the special election, requiring cities to hold their primary and general election at the same time that the state holds its primary and general election. It is estimated that by holding the elections simultaneously, approximately \$50,000 will be saved annually. Statistics gathered by those advocating the amendment during the campaign showed that of the cities in the state, six hold their elections in January, three in February, nine in March, 20 in April, four in May, five in June, two in October, 12 in November and 72 in December. The charters of the cities will have to be amended to conform to the amendment as to the time of the election as well as the terms of office. Provision is made that every officer who, at the time of the adoption of the amendment is the duly qualified incumbent of an elective office of a city, shall hold for the term for which he was elected, and until his successor is elected.

#### Test of Charter Amendments Dropped.

Dallas, Tex.—Announcement has been made that attorneys representing W. A. Shaw and others in the contest of the validity of the charter amendment election held April 4, 1916, have reached the conclusion that the decision of the Fifth court of Civil Appeals was likely to be held final

and that no application for a writ of error to the Supreme court would be made. This action ends the litigation which followed the election. It involved the validity of the amendments under which the city claimed authority to hold the franchise election of April, 1917, and if the former election had been held invalid, the franchise grants would also have been invalid. A number of other amendments also were involved, including that permitting an increase in the amount of park bond indebtedness from \$500,000 to \$750,000. Other propositions involved were the regulation of division of cost of street paving, pensions for the police and fire departments, limitation of business districts, changing the method of selecting the city auditor, permitting segregation of races and prohibiting liquor sales at Fair Park. The principal legal point involved in the case was a ruling upon what constitutes a majority vote. The city maintained that a majority of the votes actually cast upon any single issue was sufficient. The contestants had contended that it required a majority of all the legal voters in the city to change the charter, or, if not that, at least a majority of all persons who attended the polls to vote on any proposition.

#### Cost of Increasing Employees' Wages.

New York, N. Y.—The Board of Aldermen recently adopted a resolution recommending to the Board of Estimate and Apportionment that the minimum scale of wages for per diem employees in all city departments be fixed at \$3. The Bureau of Personal Service reported that the annual cost for such an increase, based on budget schedules as of January 1, 1917, would amount to \$818,218.32. "The consideration of a proposition to increase to a \$3 rate employees now compensated at less than \$3 per diem would possibly involve discussion of increase in the rates for employees paid on a per annum basis at less than \$900, an equivalent of the average earnings for a year at the \$3 per diem rate," says the report. The cost for increase in per annum rates for laborers and allied groups to \$900, exclusive of low-priced hospital and institutional help, based on the budget schedules as of January 1, 1917, would amount to \$461,795. The total would be \$1,280,013.32. The approximate amount of \$216,176 required for increase for per annum workmen in the street cleaning department is based on the advanced rates below \$900 now temporarily paid, on account of the condition of the labor market. Temporary increases have also been made in per diem rates for laborers from \$2.30 and \$2.50 to \$2.60. Drivers were allowed an increase from \$2.40 to \$2.75, stablemen from \$2.40 to \$2.60, sweepers from \$2.30 to 2.60, hostlers from \$2.30 to \$2.40 to \$2.70, loaders from \$2.40 to \$2.75, boardmen from \$2.40 to \$2.70.

## MISCELLANEOUS

#### New Housing Legislation in Michigan.

Lansing, Mich.—What is considered by authorities the best housing law in the country was recently passed by the state legislature to go into effect next month. The act applies to all cities in the state with 10,000 or more population, which include Detroit, Grand Rapids, Saginaw, Flint, Bay City, Kalamazoo, Lansing, Jackson, Battle Creek, Muskegon, Pontiac, Port Huron, Ann Arbor, Escanaba, Ironwood, Alpena, Ishpeming, Sault Ste. Marie, Manistee, Marquette, Traverse City, Holland, Benton Harbor, Hancock, Ludington, Wyandotte, Adrian, Negaunee and Owosso. The fight for such legislation has been won after six years—two years ago it met defeat in the legislature. At this time the governor appointed a commission to investigate housing conditions and the present law is the result. The new law is based on Lawrence Veiller's well-known "Model Housing Law," which it follows more closely probably than does any other law in the country. The commission whose work brought about the legislation consisted of Lewis T. Wilmarth, Grand Rapids; Judge Alexis C. Angell, Detroit; Edward C. Mereshon, Saginaw; Fred H. Begole, mayor, Marquette. No funds were appropriated for its work. Robert E. Todd, of the state board of health, acted as ex-

pert adviser of the Detroit Housing Association, which took the leading part in the state movement. The law applies to every class of building, including tenement houses, private dwellings, two-family dwellings, flats, apartment houses, hotels, lodging houses and boarding houses.

#### Vote for Municipal Ice Plant.

Meridian, Miss.—By a big vote of 796 against 211, a majority of 585, the voters exceeded the necessary two-thirds and approved the proposition to amend the charter to authorize a municipal ice plant. The local private plants fought the plan in newspaper advertisements and other campaign methods. By the vote the city can, at any time that it has the money or can provide the money, establish, own and operate an ice plant. Before this can be done, however, a vote will have to authorize the issuance of sufficient bonds by the city to build an ice plant and equip it, or the city could buy one or more of the existing plants. When citizens desire the new law put into effect, they will probably get up a petition to the mayor and the city council, asking that a bond election be held, and the council, under the law, will have to order it. For the bond issue, a majority vote carries the election and the advocates of municipal ownership say that they did not fear the result as the vote indicates that the great majority of people are in favor of cheaper ice. Councilman J. M. Slaughter has made inquiries as to securing machinery for an ice plant. He said that the quickest any firm had promised to get machinery here, under present conditions, was in twelve months' time, and it is considered impossible to put in a new plant before some time next year. There are four ice plants in the city and it is probable that one or two of them could be purchased at reasonable prices.

#### New Public Bath Opened.

Newark, N. J.—Following its opening the new East Side public bath is now in operation and will probably draw away all the patronage from the nearby Walnut street building. The East Side bath, thoroughly modern in every respect, can be used by men and women simultaneously in separate sections. The large pool is in the center of the building; on one side of it are individual dressing rooms and showers combined, while on the other side are dressing rooms, lockers and showers. The room intended for bathing only can be shut off from the pool. The other room is intended only for pool users, and each person intending to swim must first take a shower bath. No other public bath maintained by the city has a swimming pool in working order. Instruction in swimming is to be given and later there probably will be organized swimming matches. The new bath is completed after many delays. Ironbound district residents first asked for it in April, 1913. In March, 1914, the finance committee of the common council recommended

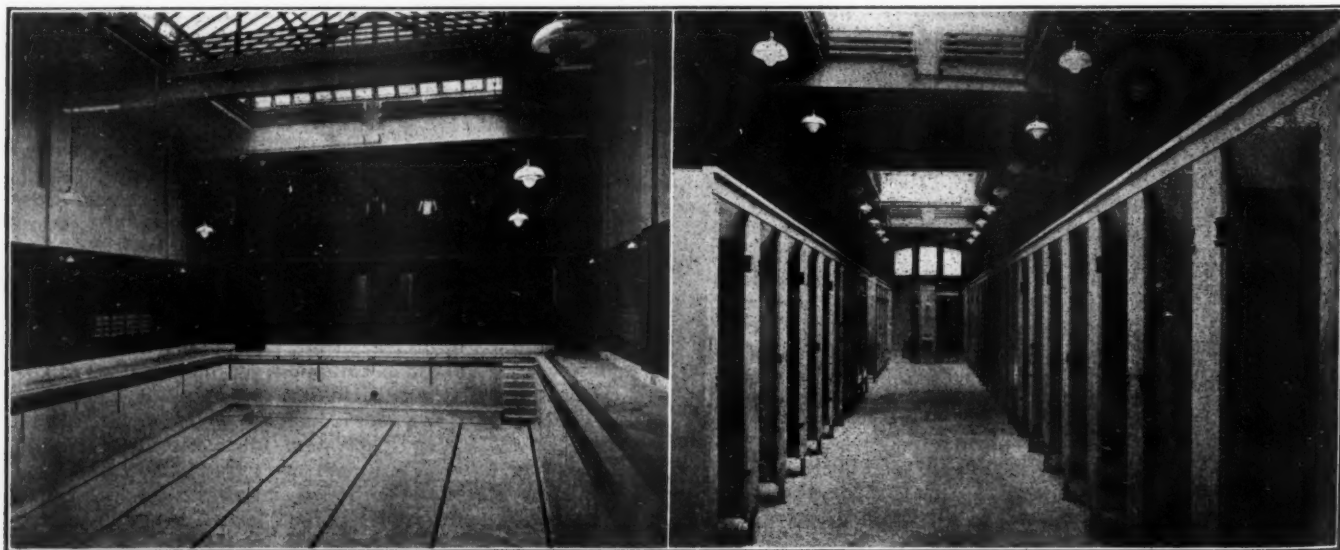
a bond issue of \$40,000 to purchase the site. This action was delayed by high prices demanded by owners of the property with the result that in May it was bought under condemnation for \$36,683. In December, 1914, the contract for the building was let for \$81,089, but work was not started until the spring of 1915. Since then there has been delay after delay. The accompanying illustrations show the swimming pool and the combined individual shower baths and dressing rooms.

#### Strong Fight for Detroit Housing Code.

Detroit, Mich.—On May 10, 1916, the board of health adopted a housing code governing building, occupancy and maintenance of dwellings, following a survey by Lawrence Veiller at the request of former health officer W. H. Price. The code was prepared by Henry F. Vaughan, assistant health officer, and W. Frank Walker, sanitary engineer, working with Mr. Veiller. The new code came into operation this winter and immediately met with powerful opposition from building and real estate interests because of its thoroughness of control. On the resignation of health officer Price, Dr. James W. Inches gave his strong support to the code and fought vigorously for its enforcement. The legality of housing regulation by the health board was questioned by the antagonistic interests, but the corporation counsel declared in favor of the health board. The new state housing law supersedes the code and the health board has amended the regulations to conform with it, and the same action has been taken by the aldermen with reference to their building code.

#### To Test Right to License Gasoline Pumps.

Ogden, Utah.—Having failed in its first action against the Ogden Paint, Oil & Glass company to force the payment of \$75 a year as a license fee for each gasoline dispensing pump operated, Ogden has commenced a civil suit against the company and aims to test the matter in the Utah supreme court. The company refused to pay the license fee demanded by a city ordinance which was passed last September. A charge of operating a pump without a license was preferred against the company and other companies that did not pay the fees, but the cases were dismissed in the district court. Now the city is suing in the civil division of the municipal court. Only one suit has been filed, and that against the Ogden Paint, Oil & Glass company. Whether the other gasoline selling concerns are required to pay the \$75 a year license depends on the outcome of the suit. The company has filed a demurrer to the action, declaring the ordinance requiring such a fee is contrary to the United States constitution and the Utah constitution. City officers desire that the ordinance be held valid because the income from the gasoline pumps will help to take the place of the license fees that will be missed when the saloons close August 1.



Courtesy, Newark (N. J.) Evening News.

NEW EAST SIDE MUNICIPAL BATHS IN NEWARK, N. J.



## LEGAL NEWS

### A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

#### Power to Abate Nuisance.

(Ala.) Municipal authorities have power to abate a nuisance, but they cannot abate lawful business, trade, or thing as a nuisance, when it is not such in law or fact, or is not operated so as to be likely to become one.—*Spear v. Ward*, 74 So. 27.

#### Sea Wall—Public Improvement—Ad Valorem Tax.

(Miss.) A sea wall to protect city from tides and floods is public improvement for which city can lay ad valorem tax on whole property of municipality.—*Sick v. City of Bay St. Louis*, 74 So. 272.

#### Testifying Before Council—Refusal.

(Mo. App.) One subpoenaed to testify before committee of governing body of municipality as to matter within jurisdiction of governing body cannot refuse to attend on ground that committee might act arbitrarily or capriciously; for it will be presumed that committee will confine itself to matters within its jurisdiction.—*Ex parte Holman*, 191 S. W. 1109.

#### Obligation of City to Light Streets.

(Ky.) A city is under no obligation to light its streets, and is not liable for injuries caused by their unlighted condition where it has not attempted to light them.—*Duley v. Town of Smithland*, 192 S. W. 21.

#### Police Power—Maintaining Sewers.

(Ala.) Preservation of public health by installation and maintenance of sanitary systems of sewers and closets is within police powers of government, subject to which inhabitant of municipality holds his individual rights to property and liberty.—*Spear v. Ward*, 74 So. 27.

#### Deposit to Protect City—Forfeiture of Bond.

(Mo. App.) It being within power of a city to require a deposit to indemnify it against failure of a bidder to enter into a contract to do work if awarded to him on his bid, such failure will forfeit security.—*City of Weston v. Bank of Greene County*, 192 S. W. 126.

#### Power of Council to Call and Hear Witnesses.

(Mo. App.) The governing body of a municipality may inquire into matters concerning which it purposes to legislate, and for that purpose may call witnesses and compel their attendance by commitment.—*Ex parte Holman*, 191 S. W. 1109.

#### Adjourned Meeting—Validity of Ordinance.

(Ky.) Where ordinance was finally passed at adjourned meeting called by council itself, designating purpose thereof at which all members were present, no objection can be made that notice of adjourned meeting was not given, mayor not calling meeting as authorized by Ky. St. § 3301.—*Tandy & Fairleigh Tobacco Co. v. City of Hopkinsville*, 192 S. W. 46.

#### Filing Claims—Time Limit—Contract Work.

(Kan.) Gen. St. 1915, § 1460, requiring certain claims to be filed against city within four months, does not apply to contractor's action for work done under contract, illegal only because of irregularities in preliminary proceedings, for work done and used by city or for that done and discarded when specifications were changed.—*John Ritchie & Sons Co. v. City of Wichita*, 163 P. 176.

#### Validity of Ordinance Prohibiting Use of Streets for Building.

(Ill.) Ordinance prohibiting use of streets or alleys for erection of certain structures without permission of mayor and street committee, being void under Cities and Village Act, art 5, § 1, as delegating to officers powers vested only in city council, cannot be held valid prohibition of forbidden acts the provision for permission by officers being inseparable from other provisions of ordinance.—*City of Sullivan v. Cloe*, 115 N. E. 135.

#### Ordinances—Good Faith—Validity.

(Wash.) Municipal ordinances not in themselves invalid will not be presumed to have been enacted in bad faith.—*Allen v. City of Bellingham*, 163 P. 18.

#### Police Power—Closing Streets.

(S. C.) Under its charter powers, the town council of West Greenville had power to close two streets across which a railroad was about to put eight or ten tracks, as a measure of safety within the town police power.—*Batson v. Southern Ry. Co.*, 91 S. E. 310.

#### Effect of Street Opening on Land Value.

(Md.) Under Acts 1914, c. 125, § 176a, a tract of land which has no use except as a site for an electric light plant, may, nevertheless, have a market value which the opening of the new street will enhance.—*Consolidated Gas, Electric Light & Power Co. of Baltimore v. City of Baltimore*.

#### "Free Use of Public Highways"—Jitneys.

(Wash.) The provision of Laws 1915, p. 385, § 34, prohibiting municipal corporations from taking away from motor vehicles whose owners have complied with the law the "free use of the public highways" held not to invalidate a jitney bus ordinance.—*Allen v. City of Bellingham*, 163 P. 18.

#### Benefit of Sea Wall—Power to Assess.

(Miss.) Power to assess special benefits on account of sea wall constructed by municipality may be conferred on bond commissioners appointed by board of aldermen and mayor to construct wall.—*Sick v. City of Bay St. Louis*, 74 So. 272.

#### Trial of Police Officer.

(Cal. App.) Though charter of a municipality declared that no member of police department should be subject to punishment for breach of duty or misconduct except after trial upon verified complaint, defective verification of complaint for removal may be waived by proceeding to trial thereon without objection.—*Donovan v. Board of Police Com'rs of City and County of San Francisco*, 163 P. 69.

#### Change of Grade—Damages.

(W. Va.) A municipality is liable for the consequential damages accruing by change of a grade on construction of an approach to a public bridge, though bridge extended beyond corporate boundary and was built jointly by county and municipality; municipality alone changing grade.—*Kinney v. Town of West Union*, 91 S. E. 260.

#### Police Power—Installing Sanitary Appliances.

(Ala.) City ordinances relating to preservation of public health by installation and maintenance of sanitary systems of sewers and closets, with provisions for enforcement, will be presumed valid, unless police power has been manifestly transcended or abused.—*Spear v. Ward*, 74 So. 27.

#### Record of Council Meeting—Completeness.

(La.) Where minutes of town council showed that ordinance was adopted by vote of "yeas" and "nays," their silence as to other formalities not required by statute to be entered on minutes did not prove that such formalities were not observed.—*Town of Ruston v. Lewis*, 73 So. 862.

#### Municipal Employees—Classes.

(N. Y. Sup.) Those rendering services to a municipality are divided into three classes: Public officers, who are entitled to the salary, whether they performed the services or not; clerks and subordinates, protected in their positions by the charter provisions against discharge without notice by veteran laws, and by the civil service laws; and employees in minor positions, whose pay depends upon work performed.—*Goldschmidt v. Hardy*, 163 N. Y. S. 305.

#### Obstructing Streets—Moving Buildings—Wires in Street.

(Neb.) Under a general ordinance requiring temporary removal of poles and wires to allow passage of buildings, franchise to a street car company providing that it shall construct its tracks so as to obstruct the street as little as possible may be construed to require company to temporarily remove its wires for moving of buildings.—*State v. Omaha & C. B. St. Ry Co.*, 161 N. W. 170.

## NEWS OF THE SOCIETIES

### Calendar of Meetings.

**June 26-30.—AMERICAN SOCIETY FOR TESTING MATERIALS.** Annual meeting, Atlantic City, N. J.

**July 10-12.—MUNICIPAL LEAGUE OF INDIANA.** Annual convention, Shelbyville, Ind. Secretary, W. S. Jones, City Clerk, Shelbyville.

**July 12, 13.—LEAGUE OF MICHIGAN MUNICIPALITIES.** Annual convention, Grand Rapids, Mich. Secretary, Charles A. Sink, Ann Arbor, Mich.

**July 24-27.—DOMINION ASSOCIATION OF FIRE CHIEFS.** Annual convention, Port Arthur and Fort William, Ont. Secretary, James Armstrong, Chief, Fire Department, Kingston, Ont.

**July 30-Aug. 3.—SOUTHERN SOCIOLOGICAL CONGRESS.** Annual meeting, Blue Ridge, N. C. Secretary, J. E. McCulloch, 508 McLachlen Bldg., Washington, D. C.

**Aug. 1-3.—AMERICAN SOCIETY OF SANITARY ENGINEERING.** Annual meeting, Grand Rapids, Mich. President, William C. Groeninger, Ohio State Board of Health, Columbus, O.

**Aug. 6.—PACIFIC COAST ASSOCIATION OF FIRE CHIEFS.** Twenty-fifth convention, Anaconda, Mont. Secretary, ex-Chief H. W. Bringham, Seattle, Wash.

**Aug. 15-17.—LEAGUE OF WISCONSIN MUNICIPALITIES.** Annual convention, Racine, Wis. Secretary, Ford H. MacGregor, Madison, Wis.

**Aug. 21-23.—NEW YORK STATE FIREMEN'S CONVENTION.** Flushing, N. Y. Secretary, Thos. Honohan, Frankfort, N. Y.

**Aug. 22.—UNION OF NEW BRUNSWICK MUNICIPALITIES.** Annual convention, St. John, N. B. Secretary, James King Kelley, St. John.

**Aug. 27-29.—UNION OF CANADIAN MUNICIPALITIES.** Annual convention, London, Ont. Secretary, W. D. Lighthall, K.C., Westmount, Que.

**Sept. 5-8.—LEAGUE OF AMERICAN MUNICIPALITIES.** Annual convention, Gary, Ind. Secretary, Robert E. Lee, City Hall, Baltimore, Md.

**Sept. 11-13.—AMERICAN ASSOCIATION OF PARK SUPERINTENDENTS.** Annual convention, St. Louis, Mo. Secretary, Roland W. Cotterill, 533 City Hall, Seattle, Wash.

**Sept. 11-14.—NEW ENGLAND WATERWORKS ASSOCIATION.** Annual convention, Hartford, Conn. Secretary, Willard Kent, 715 Tremont Temple, Boston, Mass.

**Sept. 18-20.—LEAGUE OF VIRGINIA MUNICIPALITIES.** Annual convention, Lynchburg, Va. Secretary, L. C. Brinson, Portsmouth, Va.

**Sept. 24-26.—LEAGUE OF CALIFORNIA MUNICIPALITIES.** Annual convention, Santa Rosa, Cal. Secretary, Wm. J. Locke, Pacific Building, San Francisco, Cal.

**Sept. 27-29.—AMERICAN AND CANADIAN ENGINEERS AND ARCHITECTS OF NORWEGIAN BIRTH OR DESCENT.** Informal congress and re-union, Chicago Norske Klub, Chicago, Ill. Chairman, Committee on Arrangements, Joachim G. Glaver, consulting engineer, Chicago, Ill.

**Oct. 15-17.—NATIONAL HOUSING ASSOCIATION.** Annual conference, Hotel La Salle, Chicago, Ill. Secretary, Lawrence Veiller, 105 East 22d St., New York City.

**Oct. 17-18.—LEAGUE OF MINNESOTA MUNICIPALITIES.** Fifth annual convention, St. Cloud, Minn. Secretary-treasurer, Richard R. Price, University of Minnesota, Minneapolis.

**Nov. 12-16.—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.** Annual convention, New Orleans, La. Secretary, Charles C. Brown, 469 Transportation Building, Chicago, Ill.

**Nov. 21-24.—NATIONAL MUNICIPAL LEAGUE.** Twenty-third annual meeting, Hotel Statler, Detroit, Mich. Secretary, Clinton Rogers Woodruff, 703 North American Bldg., Philadelphia, Pa.

**Nov. 20-23.—PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA.** Recreation Congress, Milwaukee, Wis. Secretary, H. S. Braucher, 1 Madison Ave., New York, N. Y.

### Illuminating Engineering Society.

Election of the following officers of the Illuminating Engineering Society for the year 1917-1918 has been confirmed:

President, G. H. Stickney; vice-presidents, W. G. Hoyt and C. E. Stephens; general secretary, Clarence L. Law; treasurer, L. B. Marks; directors, R. F. Pierce, S. C. Rogers and P. S. Young.

The election of the following section officers also was confirmed:

New England Section—Chairman S. C. Rogers; secretary, M. R. Pevear; managers, J. W. Cowles, David Crownfield, C. A. B. Halvorson, R. G. Hudson and George P. Smith, Jr.

New York Section—Chairman, A. S. McAllister; secretary, Norman D. Macdonald; managers, D. F. Atkins, S. B. Burrows, W. J. Clark, Alexander Maxwell and A. L. Powell.

Pittsburgh Section—Chairman, L. O. Grondahl; secretary, W. P. Hurley; managers, E. J. Edwards, L. J. Kiefer, Harold Kirschberg, J. L. Minick and H. N. Muller.

Philadelphia Section—Chairman, Walton Forstall; secretary, Unit Rasin; managers, John R. Hare, J. B. Kelley, H. H. Ganser, G. B. Regar and C. W. Wardell.

Chicago Section—Chairman, E. H. Freeman; secretary, James J. Kirk; managers, C. A. Carpenter, Alfred O. Dicker, A. H. Meyer, Fred A. Rogers and J. L. Stair.

### New York State Conference of Mayors and Other City Officials.

At the Eighth Annual Conference of Mayors and Other City Officials of New York State, held at Buffalo, June 11, 12 and 13, a special effort was made to secure closer co-operation between state and city government. Among the matters considered at the meeting were the development of state and city sources of revenue by indirect taxation, the reduction of feeble-mindedness, the reorganization of state charitable supervision, municipal home rule and the co-operation of the cities with the state government during the war. City problems of an administrative character were also discussed formally and informally, the liveliest interest developing in problems incident to the war.

In his address as president of the Conference, Mayor Cornelius F. Burns summarized the work of the organization during the last year as follows: Operated the State Bureau of Municipal Information; drafted and had introduced into the Legislature eight

bills, four of which are now laws; assisted State Department of Education in redrafting the bill to codify the education laws of the state; co-operated with the State Tax Department to reduce tax exemptions and to improve the administrative work of local Boards of Assessors; studied and took action on 253 different bills affecting the cities of the state generally; secured amendments to the Emerson Tax bill to give cities one-third of the revenue from the tax on the net incomes of corporations; conducted four state-wide campaigns: (a) against high costs of foodstuffs and manipulation of speculators, (b) in co-operation with the State Department of Education to put under cultivation vacant city lots and back yards, (c) to have patriotic exercises in all city schools on the day President Wilson read his war message to the Congress, (d) to stimulate interest in the urban distribution of food; drafted a plan for municipal home defense work; adopted and recommended to the cities standard units for sewer construction and street paving. Of the bills studied by the Conference, 78 were approved by its legislative committee, of which 37 were passed by the legislature. Seventy-two bills were disapproved by the Conference and only seven of these were passed by the Legislature.

"I believe, said Mayor Burns, "that more municipal legislation affecting all cities has been obtained than was granted by any previous legislature. Through our efforts we have placed upon the statute books this year important laws affecting the cities of the state generally. I refer particularly to the State Highway Traffic act, the uniform bond law, the measure giving all cities the right to limit the height of buildings and to restrict the use of property and the law giving us authority to establish departments of markets with comprehensive powers. In co-operation with others we have assisted in having enacted several other laws, such as the so-called Home Rule Education law, amendments to the tax law and the measure designed to abolish toll bridges. We have also been uniformly successful in having objectionable features removed from bills that had been introduced and which, if enacted into law, in their original form, would have been detrimental to the interests of the cities.

"While we shall be compelled to devote much time and energy to problems incident to the war, the cities should not neglect general activities. Although the high cost and scarcity of materials and labor make it necessary for some of us temporarily to postpone some municipal undertakings, we should not let our cities slip back. We must not lose our grip on the progress we have been making. I do not endorse the belief prevalent in some sections that all municipal activities should be curtailed. On the contrary I believe that even during war times each city should continue to progress consistent with the needs of the nation and economic conditions."



Senator Henry M. Sage, Chairman of the State Senate Finance Committee, assured the cities that they need have no fear that the state, in seeking new sources of revenue, will cripple them. He said that the state realizes the necessity of the case, has a distinctly fellow feeling for the cities and will not intentionally encroach upon their preserves.

The proposed Home Rule Constitutional amendment drafted by him and approved by the last legislature was defended by Senator Elon R. Brown, temporary president of the State Senate. In the course of the discussion it developed that he and the Conference agree on most of the essentials of a Home Rule amendment, but that they are still far apart as to the form of the amendment. It seemed to be the prevailing belief after the discussion that during the coming year the cities and the legislature will agree on a satisfactory compromise.

Charles H. Strong, appointed by Governor Whitman to investigate the State Department of Charities, discussed his recommendations and made a strong and favorable plea for the support of the Mills bill to reorganize the State Board.

The principal topics presented and

discussed at the second day's session were "Assessment Methods in Buffalo," by Commissioner Charles B. Hill of the department of finance, and "Paving Contracts," by W. Earl Weller, city engineer of Binghamton.

Mr. Weller said that red tape costs taxpayers between eight and ten per cent. of the cost of street paving. He expressed the belief that ninety per cent. of the money wasted under the procedure prescribed by state law could be saved by simply changing the time of designating the type of pavement required.

Mr. Weller attacked the paving procedure required by the second class cities charter law and the practice of exacting from all contractors a surety bond for the faithful completion of contracts. From the time a paving petition is presented until the work can be started from three to five months are required to carry out the mandates of the law. This delay, Mr. Weller asserted, necessitates much work being done under unfavorable weather conditions.

"This constant fretting away of money in useless safeguards," Mr. Weller told the city officials, "diminishes very appreciably the amount to be spent on necessary work and de-

creases the size of the tax dollar. The result is either less work or larger taxes, either of which finds its hosts of critics among citizens who will not or cannot understand."

Commissioner C. B. Hill, of Buffalo, after elaborately outlining the new method of making assessments in Buffalo and detailing the plan of assessing corporation equipment as realty, charged that the state legislature at its recent session had resorted to expediency instead of principle in its policy of taxation.

He said that the Emerson bill providing a three per cent tax on the net incomes of corporations was converted by the legislature into a medium through which the localities were stripped of two-thirds of the local revenue for the benefit of the state treasury.

Marcus M. Marks spoke on "Service Work Among City Employees." He told of the work among the 2,300 employees in the borough of Manhattan and the excellent results of the joint trial board before which each employee is entitled to a hearing before dismissal. Another feature is the neighborhood committee idea. These committees keep the officials informed of the needs of the neighborhood.

Senator Elon R. Brown spoke on "State and Municipal Powers." He said that he thought the law which compels the city of New York to meet current expenses as they arise was one that would be put into effect in every city with good results.

Homer Folks urged cities to support the state in its contemplated plan to reduce feeble-mindedness and to carry out a five-year program he outlined. He contended that by so doing the cities eventually will be able to reduce the cost of police, hospital and charitable work.

Governor Whitman recommended that the mayors appoint advisory committees to assist the cities in solving the many problems growing out of the war. He impressed upon the officials the importance of the grim task ahead of them.

Mayor James T. Lennon announced that the Conference's State Bureau of Municipal Information is no longer an experiment and that its permanency is assured. As a result of its work, he said, the cities have substituted facts for guesses in the administration of municipal affairs. "We believe," he concluded, "that we have in this bureau the most effective weapon of warfare yet devised against inefficiency in municipal service."

The qualifications of traffic officers and new methods of regulating traffic were discussed by Henry Jay Case, secretary of the New York city police department. Various types of municipal public markets were described by G. V. Branch of the U. S. Department of Agriculture. George B. Buck of the New York City Commission on Pensions told the city officials the essen-

## PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Knoxville, Ia., is to construct a WATERWORKS system. C. W. Rowland, Des Moines, Ia., is the engineer.

Schoharie, N. Y., is to build a reinforced concrete BRIDGE. The engineer is E. J. Doyle, DeGraaf building, Albany, N. Y.

A RESERVOIR is to be built by Junction City, Kans., plans being in preparation by Burns & McDonnell, Interstate building, Kansas City, Mo.

SEWERS and PAVEMENTS are to be constructed by Dormont, Pa., from plans prepared by the engineers, Douglass & McKnight, 1315 Union Bank building, Pittsburgh, Pa.

Waverly, Ia., is to improve its WATERWORKS and HYDRO-ELECTRIC PLANT. The consulting engineer for the work is Chas. P. Chase, Clinton, Ia.

Palmyra, N. J., is to build a SEWER SYSTEM and DISPOSAL PLANT. Plans are being prepared by Remington & Vosbury, 601 Market street, Camden, N. J.

Broad Oak, W. Va., is to make STREET IMPROVEMENTS from plans prepared by M. W. Smith, Jr., 513 Union Bank building, Clarksburg, W. Va.

The CIVIL SERVICE COMMISSION of the state of New Jersey is to reorganize its whole system. The commission has retained as expert to standardize salaries J. L. Jacobs, Chicago, Ill.

Sanitary SEWERS are to be built by Warsaw, Ill., W. S. Shields, 8 S. Dearborn street, Chicago, Ill.

STREET IMPROVEMENTS to be made by Story City, Ia., were planned by J. Q. Wickman, Ames, Ia.

Cuba, Wis., is to improve its WATERWORKS. Plans and specifications were prepared by J. G. Thorne & Co., 317 Howes Block, Clinton, Ia.

Strathroy, Ont., is to improve its WATERWORKS. The engineers for the work are Kerry & Chace, Confederation Life building, Toronto, Ont.

Orville, O., is to make STREET IMPROVEMENTS according to the plans and specifications prepared by T. W. Longabaugh, News building, Canton, O.

PAVEMENTS and SEWERS are to be built by St. Johnsville, N. Y. The engineer to prepare plans and specifications is Morrell Vrooman, 10 N. Main street, Gloversville, N. Y.

A FILTRATION PLANT is to be built by Mt. Joy, Pa., following the preparation of plans and specifications by the engineers, Gannett, Seelye & Fleming, 204 Locust street, Harrisburg, Pa.

The cities of Bristow, Marlow, Clinton and Sand Springs, Okla., are making extensive PAVING IMPROVEMENTS. The consulting engineers for all these projects are the Benham Engineering Company, Colcord building, Oklahoma City, Okla.

(Continued on page 860.)

## NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

### SYMONS DISC CRUSHER.

#### Adjustable, Centrifugal Feed, with Manganese Crushers.

The Symons disc crusher consists essentially of two discs, A and B, held in place by two shafts, one of which is hollow and contains the other. The large ball-and-socket connection of the shafts allows their axes to be set at an angle to each other. The outer disc, A, is held in a cap firmly fastened to the bell-shaped end of the hollow shaft C, and is driven by the belt wheel D. The inner disc, B, supported by the half ball and solid shaft inclines to rotate with the disc A, though not positively driven when the machine is running empty. When stone is fed between the discs, they both rotate together in the same direction, at the same speed, producing the crushing action.

This crushing effect is quite independent of the eccentric E, and would be carried on if the latter remained at rest. This eccentric comprises the hub of the pulley F, which is driven in a direction opposite to that of the pulley D. The function of the eccentric is to increase the rapidity of the crushing action, or closing of the discs. The outer end of the solid lever shaft is carried around in one direction by the eccentric E, while both shafts are rotating together in the other direction. The two shafts and discs attached rotate at the proper speed to force the feed and fling out the product. When stone is fed through the central feed

opening it is thrown by centrifugal force into the space where the discs are widest apart. It is carried around with them to where they are closer together and is crushed in the operation. The smaller particles fly out from between the discs, into the encircling chute, while the larger particles are caught again and the operation repeated.

A number of important and exclusive advantages are claimed for this crusher. It will take the rejections, screened or unscreened, from standard gyratory crushers and reduce them at one operation to  $\frac{3}{4}$ -inch size or less. It will reduce wet or dry gravel boulders mixed with sand to the smaller product. It can be quickly adjusted to make any standard size of product down to  $\frac{3}{8}$ -inch, as desired. The reduction is accomplished without any grinding movement or dangerous wear.

The support of the feed spout is adjustable and the spout is elliptical in section. The hood casing completely encloses the crushing members to prevent escape of dust. This casing is divided vertically, each half being hinged on a supporting shaft.

Congestion and choking is avoided because the stone is spread by the centrifugal effect between the discs. The stone is thrown out the instant it is reduced to the proper size.

The crushing members are of manganese. They wear smooth, not in grooves, and may be set closer together to take up wear. This gives

maximum service. The main crushing load is on the large ball and socket bearing, having little movement.

The bearings are positively dust-proof. The shaft and eccentric bearings operate in a bath of oil. The heavy frame forms an oil-tank from which oil is forced through these bearings by the oil pump at the rate of several gallons per minute. The oil is returned directly to the tank without loss. The hollow shaft comprises a reservoir from which oil is supplied to the large ball-and-socket joint.

The crusher is made in four sizes—18, 24, 36 and 48-inch. The corresponding sizes of feed are  $1\frac{1}{2}$ ,  $2\frac{1}{2}$ ,  $3\frac{1}{2}$  and  $6\frac{1}{2}$  inch. The minimum capacities range from 5 to 15, 12 to 30, 25 to 65 and 45 to 120 tons per hour.

The accompanying illustrations show the disc principle, a large size crusher and a sectional view of the machine. The crusher is made by Chalmers & Williams, Inc., Chicago Heights, Ill.

### MACCAR MOTOR TRUCK

#### For General Hauling and Contractors' Purposes.

The Maccar truck is a worm-drive machine made in four models: "L," 1-1 $\frac{1}{2}$  tons; "H," 2 $\frac{1}{2}$ ; "M," 3 $\frac{1}{2}$ ; and "U," 5 $\frac{1}{2}$  tons. An important feature of the truck is the Mueller demountable power plant unit. The motor, clutch, transmission, radiator, pump, magneto, carburetor, dash, toe boards, brake and foot pedals, steering gear and all spark and throttle controls are assembled in one cradle and as a unit mounted into the frame. By removing six nuts, disconnecting drive shaft, brake and fuel connections, it can be removed and another unit substituted in less than thirty minutes, without disturbing the driver's seat. The motor, clutch and transmission are in one assembly, mounted in the cradle on three-point suspension and carried in dust-proof



MACCAR  
3 1/2-TON  
STEEL  
BODY  
DUMP  
TRUCK.



housing. A description of the 3½-ton model follows:

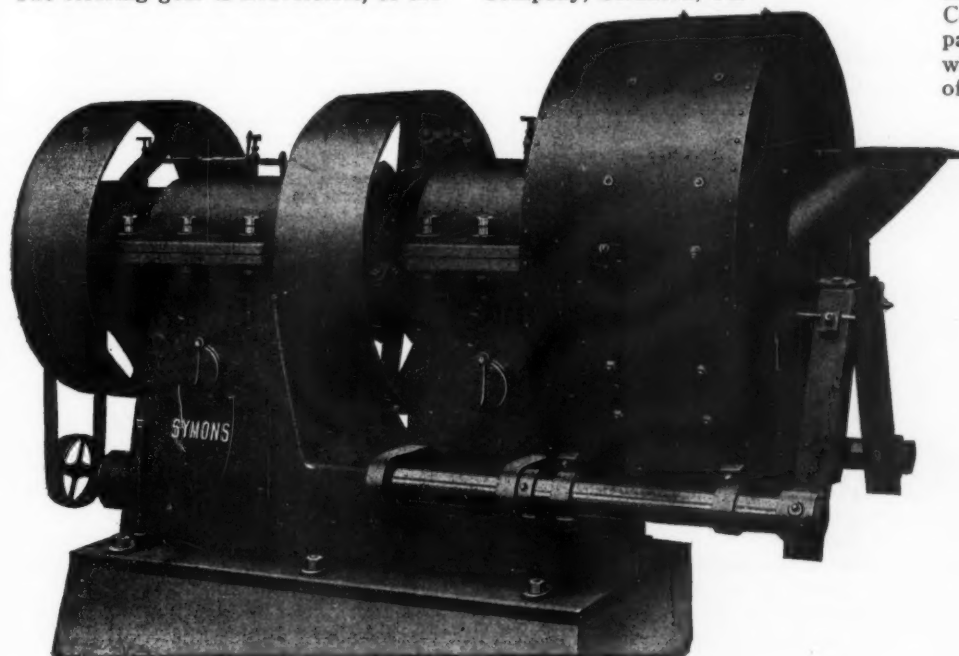
The motor is a Continental 4½x5½, in pairs. Ignition is by high tension magneto, single system and shaft driven through a universal coupling. The carburetor is Stromberg, gravity feed. The governor is of the centrifugal type, set and sealed to proper speed of motor.

The transmission is sliding, selective, three speeds forward and one reverse. The clutch is dry multiple disc, extremely flexible and easy of operation. The steering gear is irreversible, of the

treated, and provided with heavy type bumper. The axles are Timken I beam type, with Timken bearings, in front, and Timken-David Brown worm drive equipment in rear. The springs are semi-elliptic of silicon chrome manganese steel. The brakes are duplex internal expanding, completely enclosed, and acting directly to spokes of rear wheels.

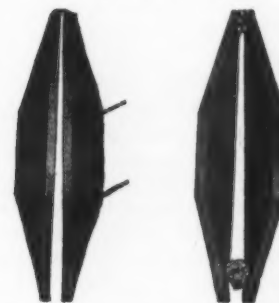
The accompanying illustrations show a top view of the 3½-ton chassis and one of a contractor's dump truck. The truck is made by the Maccar Truck Company, Scranton, Pa.

the Lake Shore Shale Brick Company. The concern has been taken over by the R. L. Dollings Company, of Ohio. Rufus C. Burton, of Zanesville, is president of the new concern and the vice-president and general manager is W. H. Lucktenberg, former general manager of the Hocking Valley Brick Company, of Columbus, Ohio, the plant being located at Logan, Ohio. The Lake Shore Shale Brick Company will have no relation or connection with the old Ashtabula Shale Brick Company. The concern has taken offices in the new building of the Ashtabula County Building and Savings Company, 195 Main street. The plant, which is located at the western edge of the city, along the New York Cen-



SYMONS DISC CRUSHER.

DISCS IN ACTION.



worm and nut type. The clutch has left side drive. The control is center, service brake clutch release and accelerators operated by foot levers through toe board. Spark and throttle control on top of steering wheel. The drive is through shaft supported by self-aligning bearing and universal joints to worm.

Lubrication is by force feed pump, actuated from cam shaft in combination with splash to connecting rod bearings and equipped with sight gauge. The cooling system consists of a honeycomb radiator, suspended in special manner, centrifugal gear driven pump and belt fan.

The frame is pressed alloy steel, heat

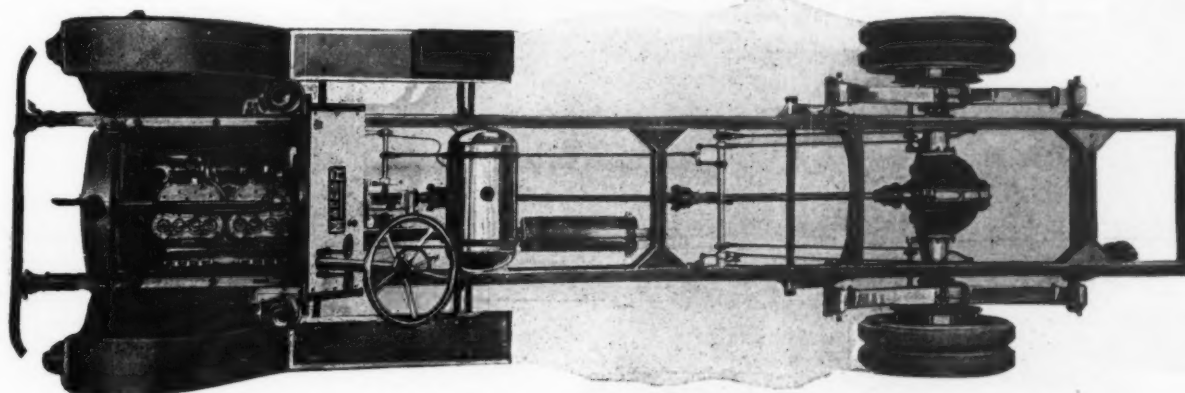
## INDUSTRIAL NEWS

**Cast Iron Pipe.**—An increase of \$5 a ton since last week is announced and prices are becoming more and more prohibitive, although construction work is urged at present prices for fear of further increases. Quotations: Chicago—4-inch, class B and heavier, \$68.50; 6-inch, \$65.50. New York—4-inch, class B and heavier, \$68.50; 6-inch, \$65.50. Birmingham—4-inch, class B and heavier, \$63; 6-inch, \$60; A, \$1 extra.

After being idle for several months the plant of the Ashtabula Shale Brick Company, Ashtabula, O., will soon be in operation again, under the name of

tral Railway, is quickly being put into shape for operation before July 1. It will make rough-face brick to be known as "Indianola Reds," common builders and wire cut lugs.

The General Electric Company announces that its New York offices were moved June 16 from 30 Church Street to the Equitable Building, 120 Broadway, where it occupies the entire twentieth floor. For nine years its offices have been at 30 Church Street, where the company located its New York offices when it outgrew the Edison Building, at 44 Broad Street. This building was originally built for the Edison General Electric Company which, in



MODEL "M" 3½-TON MACCAR TRUCK CHASSIS.

1892, was combined with the Thomson-Houston Electric Company to form the General Electric Company. In the quarter century since the General Electric Company was formed, its business has increased from about \$10,000,000 in gross sales the first year of its organization, to gross orders of \$167,169,000 during the twenty-fifth year.

#### Twenty Car Load Mixer Order.

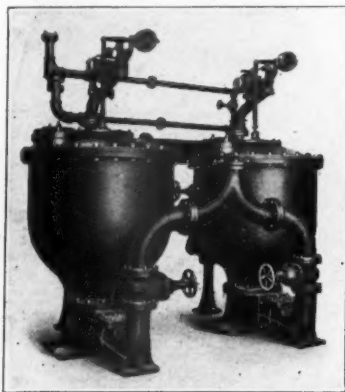
If big orders and fearless buying are any indication of general prosperity and business as usual despite the war, the receipt of what is claimed to be probably the largest order for mixers should help encourage contractors whom war conditions may have tended to depress. The order is for twenty car loads of Bantam type mixers, received by the **Ransome Concrete Machinery Company**, Dunellen, N. J., from the local New York agents, **F. W. Rebhann & Co.** Mr. Rebhann is optimistic as to this year's demand for mixers, basing his foresight on the fact that sales and inquiries already total much more this year than in the corresponding period last. The Ransome factories at Reading, Pa., and Dunellen, N. J., are in full operation.

#### Sewage Ejectors.

Yeomans Brothers Company, of 231 Institute Place, Chicago, Ill., who are the exclusive agents in the United States and Canada for the **Shone Pneumatic Sewage Ejector**, have recently issued a bulletin of these ejectors, giving all the essential dimensions, sizes of ejector pits required, etc., which should prove useful to city engineers in designing plants of this kind. These ejectors are the oldest and probably best known devices for automatically elevating unscreened sewage. They are built in capacities of 50 to 1,000 gallons per discharge, discharges usually taking place about once a minute, which rate can be exceeded occasionally, but should not be for ordinary service. They are operated by compressed air, which may be supplied from air compressors operated by either steam or electricity.

In municipal plants the ejectors are

frequently placed in vaults under the roadways or sidewalks, at whatever points the lifting is desired, while the air compressing plant can be located in the building of the municipal water works or lighting plant, or in connection with any other power plant, in which case the cost of attendance is practically nothing; or a special plant, of course, can be located in a building at any convenient point. In each case the compressed air is carried from the compressor plant to the ejector in pipes laid below the street surface. The accompanying illustration shows a duplex



SHONE SEWAGE EJECTOR.

250-gallon equipment, the capacity therefore, being about 360,000 gallons per day.

That this ejector is a practical success under all kinds of conditions is indicated by the fact that it is still manufactured and used after so many years' service in Great Britain, Russia, East India, Hungary, New South Wales, New Zealand, France, Spain and several other countries, as well as in the United States.

**Copper Output in 1916**—Smelter production of primary copper in the United States in 1916 was 1,928,000,000 lb., compared with 1,388,000,000 lb. in 1915, an increase of 39 per cent., according to the U. S. Geological Survey. The total production of refined copper was 2,259,387,315 lb., an increase of about 625,000,000 lb. over that of 1915, when

it was 1,634,204,448 lb. Of the 1917 output of refined copper, 1,579,620,513 lb. was electrolytic; 269,754,531 lb. Lake copper; 12,469,050 lb. casting copper, and 26,868,105 lb. was pig copper. The foreign electrolytic is put at 370,635,116 lb. The output of secondary copper was 104,423,807 lb. The apparent consumption of refined copper in the United States in 1916 is put at 1,429,755,266 lb., against 1,043,461,982 lb. in 1915. If to the 1,429,755,266 lb. of new refined copper is added the 594,423,807 lb. of secondary copper and copper in alloys produced during the year, it is found that a total of about 2,024,000,000 lb. of new and old copper was available for domestic consumption.

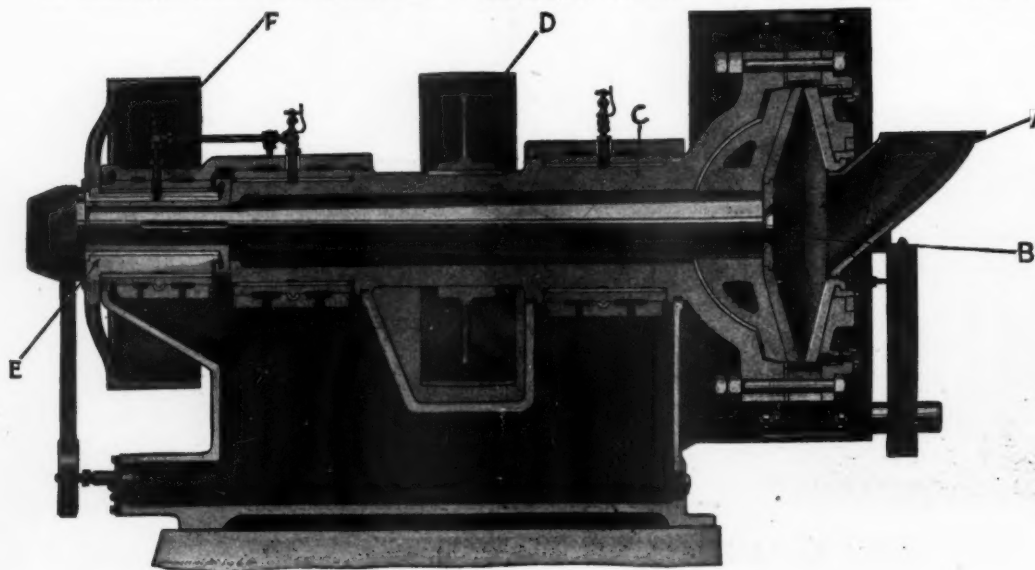
## NEWS OF THE SOCIETIES

(Continued from page 857.)

tials of a sound pension system. Municipal requirements for the pasteurization of milk were advocated by Dr. H. L. K. Shaw of the State Department of Health.

The conference refused to take action on woman's suffrage and a petition to Congress to prohibit the use of grain in the manufacture of spiritous beverages; on the ground that the organization concerns itself only with municipal problems. It voted to oppose any effort by public service corporations to increase the five-cent trolley fare in the cities in the state; to conduct a state-wide campaign to reduce the number of tax exemptions; to ask the state commissioner of education to appoint a commission to study the control of the finances of municipal departments of education; to seek legislations to prevent future abuses in issuing municipal bonds and to obtain an immediate determination as to the validity of bond issues. The conference also instructed its committees to draft a model code of general municipal ordinances and to study methods of regulating pedestrians when using the highways. The Federal Government was petitioned to pass necessary legislation for the proper control and distribution of the food and coal supplies.

The following officers of the conference were re-elected: President, Mayor Cornelius F. Burns, Troy; vice-president, Mayor Walter R. Stone, Syracuse; treasurer, Joseph W. Stevens, Albany; secretary, William P. Capes, Albany. The next conference will be held in Newburgh.



SYMONS  
DISC CRUSHER.  
(SHOWING  
MECHANISM.)



# ADVANCE CONTRACT NEWS

## ADVANCE INFORMATION BIDS ASKED FOR

## CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREETS AND ROADS.</b>				
Pa.	Wanamie.....	7 p.m., June 29..	Grad., curbing and paving with block, in Newport Twp...	W. S. Norton, Twp. Engr., Alden Station, Pa.
Me.	Augusta .....	11 a.m., June 29..	15.57 miles bit. macadam and 10.07 miles gravel surface, including draining and grading.....	Paul D. Sargent, State Highway Commr.
Pa.	Newport.....	7 p.m., June 29..	Paving with brick, streets in several villages.....	W. S. Norton, Twp. Engr., Alden Sta., Pa.
Ore.	Elgin .....	June 29..	Constructing concrete sidewalks.....	City Clerk
Pa.	Erie .....	10:30 a.m., June 29..	Paving and curbing streets.....	F. G. Lynch, City Engr.
Neb.	Red Cloud.....	10 a.m., June 29..	14,875 sq. yds. paving and 4,000 ft. curbing and gutter..	O. C. Teal, City Clk.
Me.	Augusta .....	11 a.m., June 29..	State road work .....	P. D. Sargent, State Engr.
Ohio	Niles Centre.....	June 30..	10,000 sq. yds. concrete paving, curbs and walks.....	H. L. Emerson, Engr., 133 W. Washington St., Chicago, Ill.
Wis.	Watertown ....	2 p.m., June 30..	9,609 ft. curb and gutter.....	Bd. of Public Wks.
Wis.	Marshfield .....	June 30..	7,600 sq. yds. pavement .....	John Senbert, City Clk.
Ind.	Terre Haute.....	11 a.m., June 30..	Constructing gravel road .....	Thos. Ferguson, Vigo Co. Aud.
W. Va.	Adamston.....	7:30 p.m., June 30..	Grading, curbing and paving.....	R. R. Powell, City Recorder.
Ind.	Muncie .....	10 a.m., June 30..	Street improvements .....	John R. Kelley, City Clerk.
Minn.	Pine City .....	June 30..	Highway construction, cost \$160,000.....	County Commissioners
Ill.	Lenox .....	10:30 a.m., June 30..	Unloading and hauling crushed stone for 1 1/2 mi. of road..	Town Clk., New Lenox.
R. I.	Pawtucket.....	10 a.m., June 30..	5,400 sq. yds. granite pavt. on concrete base.....	City Engr.
Ill.	Niles Center.....	June 30..	About 10,000 sq. yds. concrete pavt., including curb, gutter and sidewalks .....	H. L. Emerson, Engr., 133 W. Washington St., Chic., Ill.
Ill.	Schram City.....	(Coffee P. O.)..	2.. Concrete walks .....	J. M. Benezze, VII. Clk., R. 3, Box 19, Hillsboro, Ill.
Ind.	Rockport .....	2 p.m., July 2..	Rock road .....	J. Frank Stocking, Vigo Co. Aud.
Ind.	Angola .....	1 p.m., July 2..	County road work .....	I. W. Pence, Co. Aud.
O.	Ashtabula.....	1 p.m., July 2..	Paving roads .....	County Surveyor.
W. Va.	Hamlin .....	July 2..	6 miles of road and two bridges.....	A. F. Black, Co. Clerk.
Md.	Frederick City ..	1 p.m., July 2..	4.38 miles state aid road.....	F. M. Stevens, Pres. Co. Commissioners.
Ind.	Williamsport.....	2 p.m., July 2..	18,364 ft. gravel roads.....	D. H. Moffitt, Co. Auditor
Ind.	Nashville.....	1 p.m., July 2..	Three stone and gravel and one concrete roads.....	Omer Morrison, Co. Auditor
Ind.	Brazil .....	10:30 a.m., July 2..	Stone and gravel roads .....	W. O. Graesser, Co. Aud.
Ind.	Rushville .....	2 p.m., July 2..	15,800 ft. macadam road construction.....	W. H. McMillin, Rush Co. Aud.
Ind.	Madison .....	1 p.m., July 2..	One portable gyratory rock crusher, capacity 10 to 20 tons per hour, equipped with trucks, etc.....	Chas. S. Dabler, Jefferson Co. Aud.
Cal.	Los Angeles.....	2 p.m., July 2..	Constructing concrete pavements.....	H. J. Lelande, Co. Clk.
Minn.	Minneapolis.....	11 a.m., July 2..	Grading and macadamizing bridge approaches.....	A. P. Erickson, Tennenpin Co. Aud.
N. D.	Wahpeton ....	8 p.m., July 2..	Paving with brick, asphalt, bitulithic, creosoted wood block or concrete .....	F. L. Anders, City Engr.
La.	New Orleans.....	noon, July 2..	3.03 miles earth road construction.....	Duncan Bule, State Highway Engr.
Wash.	Shelton.....	2 p.m., July 2..	Constructing highway section .....	Arno V. Meyer, Mason Co. Engr.
Wash.	Waterville.....	5 p.m., July 2..	Street grading .....	R. W. Waterhouse, City Clerk.
Ind.	Fowler .....	1 p.m., July 2..	Gravel road construction .....	Warren, Mankey, Benton Co. Aud.
Ill.	Hillsboro .....	noon, July 2..	Concrete walks in Schram City.....	J. M. Benezze, Clk.
Ohio	Jefferson .....	July 2..	Paving and curbing .....	R. N. Case, Engr.
La.	New Orleans.....	noon, July 2..	3 miles of earth roads.....	Duncan Bule, State Highway Engr.
Ind.	Indianapolis ...	10 a.m., July 2..	Paving streets .....	B. J. T. Jeup, City Engr.
Cal.	Los Angeles.....	2 p.m., July 2..	Concrete and bituminous pavement.....	H. J. Lelande, Co. Clk.
Ind.	Kokomo .....	July 2..	Oiling streets .....	Bd. of Public Wks.
Minn.	Buhl .....	July 2..	Street improvements .....	City Clerk
Cal.	Martinez .....	July 2..	Constructing 11 miles of highway.....	J. H. Wells, County Clerk
Minn.	St. Paul .....	10:30 a.m., July 2..	Grading and improving a number of streets.....	H. W. Austin, Pur. Agt.
O.	Ashtabula .....	1 p.m., July 2..	Brick road improvements.....	B. E. Brainard, Clerk, Board of Co. Comrs.
Cal.	San Jose .....	11 a.m., July 2..	Street improvements .....	H. A. Pfister, Clerk, Board of Supervisors.
Wash.	Waterville ....	2 p.m., July 2..	Grading, draining and surfacing with gravel 2.1 miles of road .....	Robt. F. Foster, Douglas C. Engr.
N. Y.	New York.....	11 a.m., July 3..	Regulating and paving with second hand granite on a sand foundation; regulating, curbing and paving with asphalt on 6-in. concrete foundation.....	L. H. Pound, Boro. Pres., Brooklyn
Utah	Salt L'ke City..	10 a.m., July 3..	Grading, paving and curb and gutter.....	City Engr.
Ind.	Washington .....	2 p.m., July 3..	Grading and paving roads.....	J. G. Clark, Co. Aud.
Ind.	Bedford .....	1 p.m., July 3..	Constructing concrete or macadamized road.....	E. W. Edwards, Lawrence Co. Aud.
Ind.	Decatur .....	10 a.m., July 3..	One tractor road roller.....	J. Mosure, Adams Co. Aud.
Ala.	Bessemer .....	8 p.m., July 3..	Paving with brick on concrete base.....	S. R. Batson, City Engr.
Ind.	Monticello.....	10 a.m., July 3..	Two crushed stone roads and 1 gravel road.....	A. D. Fisher, White Co. Aud.
Ind.	Washington.....	2 p.m., July 3..	Pike road construction.....	J. G. Clark, Daviess Co. Aud.
Ind.	Columbia City.....	noon, July 3..	Constructing gravel road .....	T. A. McLaughlin, Whitley Co. Aud.
Ind.	Crawfordsville..	10 a.m., July 3..	Gravel road construction .....	W. F. Batman, Montgomery Co. Aud.

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind.	Rochester	2 p.m., July	3..Constructing township road	E. A. Smith, Co. Aud.
Ind.	Bloomfield	2 p.m., July	3..Gravel roads	G. E. Kidd, Co. Aud.
Ind.	Salem	1:30 p.m., July	3..16,775 ft. road work	E. E. Batt, Co. Aud.
Ind.	Albion	2 p.m., July	3..Brick road	G. A. Young, Co. Aud.
Ind.	Greenfield	10 a.m., July	3..Four gravel and brick roads	H. J. Rhue, County Aud.
Ind.	Rensselaer	2 p.m., July	3..Constructing three roads	J. P. Hammond, County Aud.
Ind.	Marion	2 p.m., July	3..Constructing gravel road	Mort McRae, County Aud.
Ind.	Shelbyville	10 a.m., July	3..Gravel for repairing county roads	F. W. Fagel, Co. Aud.
Ind.	Lafayette	10 a.m., July	3..Monolithic and semi-monolithic brick roads; about 64,000 yards	E. C. Minton, Engr.
Ind.	Wabash	10 a.m., July	3..Two rocmac roads	F. P. Kircher, Co. Aud.
Ind.	Mt. Vernon	2 p.m., July	3..Gravel road	J. R. Haines, Co. Aud.
Ind.	Madison	1:30 p.m., July	3..Constructing crushed stone roads	Charles S. Dibler, Jefferson Co. Aud.
Ind.	Lebanon	10 a.m., July	3..Gravel road	Cleve Goodwin, Boone Co. Aud.
Ia.	Davenport	2 p.m., July	3..Excavating and constr. curbing and sidewalk	J. W. Crowley, Chmn. Bd. of P. W.
Ohio	Coshocton	noon, July	5..19,000 sq. yds. brick paving	Andrew Fisher, City Engr.
Ia.	Story City	noon, July	5..Paving 7 blocks	A. Williamson, City Clk.
Mont.	Bozeman	5 p.m., July	5..Concrete curbs and walks	City Engr.
N. D.	Bowman	10 a.m., July	5..Road work and bridges	F. R. Huff, Co. Aud.
Ia.	Dubuque	8 p.m., July	5..Paving with brick, asphalt, bitulithic or wood block	City Engr.
Pa.	Wilkes-Barre	2 p.m., July	6..Resurfacing with Amiesite	Dept. of Roads & Bridges.
N. H.	Claremont	noon, July	6..Paving; cost, \$20,000	G. P. Winn, Engr., Nashua.
Ind.	Indianapolis	10 a.m., July	6..Resurfacing South St.	E. J. T. Jeup, City Engr.
O.	Columbus	noon, July	6..Grading, draining and curbing with asphalt or asphaltic concrete, also with brick	G. A. Borden, Dir. Pub. Serv. Co. Comrns.
Wash.	South Bend	July	6..Grading, draining and paving 1 mile highway	E. W. Savies, City Engr.
N. Y.	Watertown	8 p.m., July	6..Paving and concrete curb and gutter	E. W. Savies, City Engr.
N. H.	Claremont	July	6..8,000 sq. yds. Topeka pavement, 2,000 ft. concrete curb, and 1,000 ft. sewers	G. P. Winn, Engr., Nashua, N. H.
N. Y.	St. Johnsville	4 p.m., July	6..12,000 sq. yds. bit. pavt. on concr. foundation	Village Clerk.
Ala.	Selma	noon, July	7..Paving about 25,000 sq. yds. with asphalt, asphaltic concrete, bitulithic or brick	W. O. Crisman, City Engr.
Ind.	Noblesville	10 a.m., July	7..Road construction	W. O. Horton, Hamilton Co. Aud.
Pa.	Coudersport	2 p.m., July	7..Road construction	A. L. Rennells, Twp. Secy.
W. Va.	Clarksburg	8 p.m., July	9..4,500 sq. yds. brick pav't and 4,000 ft. curb at Broad Oak	M. W. Smith, Engr., Union Bank Bldg.
Wis.	Madison	2 p.m., July	9..Paving with sheet asphalt	City Engr.
Ind.	Indianapolis	10 a.m., July	9..Paving Winthrop St.	B. J. T. Jeup, City Engr.
N. Y.	Albany	1 p.m., July	9..Bituminous macadam resurfacing and widening	Edwin Duffy, State Highway Comnr.
La.	Kentwood	noon, July	9..Grading, bridging and graveling 11.52 miles of road	J. M. Fourny, Engr., Hammond, La.
W. Va.	Winfield	2 p.m., July	9..6 miles road construction	Ernest Bruce, Road Engr., Boca, W. Va.
Minn.	Duluth	July	9..Improving 8.5 miles road	Odin Halden, County Aud.
N. Y.	Albany	July	9..26 highway repair contracts, including resurfacing, reconstruction and surface treatment. Also 4,025 tons broken stone for three jobs	Edwin Duffy, State Hwy. Comr.
Minn.	Carlton	10 a.m., July	9..Constructing 3 1/4 miles of state roads	A. R. Norman, Carlton County Aud.
Minn.	Elk River	2 p.m., July	9..Road construction	Arthur Robinson, Sherburne Co. Aud.
N. Y.	New York	11 a.m., July	10..Laying brick pavement in Kensico Aerator	Bd. of Water Supply, Municipal Bldg.
Tenn.	Erwin	7 p.m., July	10..14,000 sq. yds. paving with concrete curb and gutter and concrete sidewalks	O. E. Bogart, City Recorder.
Ohio	Toledo	10:30 a.m., July	10..Reconstructing concrete walks	Gabe Cooper, Co. Aud.
Miss.	Aberdeen	July	10..Improving 49 miles sand-clay roads	County Clerk
N. Y.	New York	11 a.m., July	10..2,000 ft. surfacing with vitrified brick block at Kensico Dam	Geo. Fetherstone, Sec. Board of Water Supply
Ark.	McGehee	July	10..Constructing 160 miles of highway	Ford & MacCrea, Engrs., Gazette Bldg., Little Rock, Ark.
Wis.	Neenah	2 p.m., July	12..Paving with macadam	H. S. Zemlock, City Clk.
N. J.	Newark	2:30 p.m., July	12..Improving Little Falls Rd.	C. A. Reimer, Co. Engr.
Ohio	Cincinnati	noon, July	13..Improving roads	Co. Surveyor.
Ind.	Rochester	2 p.m., July	14..Gravel roads	E. A. Smith, Co. Aud.
Cal.	Sacramento	July	16..State highway construction	State Hwy. Comn.
Ind.	Shelbyville	July	17..Cement sidewalks	W. S. Jones, City Clk.
Pa.	Harrisburg	July	24..Vit. block and water bound macadam road construction; also grading and draining	F. B. Black, State Hwy. Comr.
Ia.	Council Bluffs	July	25..Paving streets and alleys with concrete 16 ft. wide	E. V. Gustafson, City Clerk.
Wash.	Olympia	July	25..Road work, including 21,000 cu. yds. excavation	State Highway Comn.
Ida.	Lewiston	Aug. 13	13..95,000 sq. ft. concrete walks, 21,000 ft. concrete curb and 23,000 cu. yds. grading	C. F. Leland, City Clerk
SEWERAGE.				
Ind.	Bloomington	7:30 p.m., June	29..Constructing sanitary sewer	Guy A. Davis, City Clerk.
Wis.	Manitowoc	10 a.m., June	29..Sewer construction	J. J. Kelly, City Clk.
Ind.	Evansville	9 a.m., June	29..10, 15 and 18-in. pipe sewer construction	Board of Public Works.
Ohio	Columbus	noon, June	29..Sewer construction	John Peake, Engr.
Me.	Dexter	7 p.m., June	30..3,000 ft. sewer construction	Sewer Comrns.
Ill.	Tuscola	June	30..Drainage work	W. E. Price, Engr., Drainage Dist. No. 8, Court House
O.	Jacksontown	June	30..Sewage disposal plant and sewerage system connected with school	L. A. Osborn, Pres., Board of Education.
Minn.	Redwood Falls	1 p.m., June	30..County ditch construction	L. P. Larson, Co. Aud.
O.	Canton	noon, June	30..Sanitary sewer construction	Dir. Pub. Service.
Ind.	Earl Park	2 p.m., June	30..Cleaning and repair of tile ditches	S. N. Geary, Trustee Richland Twp.
Minn.	Austin	10 a.m., June	30..Excavation, ditching and tiling	A. C. White, Co. Supt. Construction.
Me.	Dexter	7 p.m., June	30..Three sections of sewer system	L. B. Waldron, Sewer Comr.
R. I.	Pawtucket	10 a.m., June	30..9,600 ft. 10 to 45-in. sewers and appurtenances	City Engr.
N. D.	Fessenden	July	1..Constructing water works and sewer system	T. R. Arnold, Engr., Minot.
N. D.	Leeds	July	1..Water works and sewers; cost, \$35,000	T. R. Arnold, Engr., Minot.
Wis.	Appleton	9 a.m., July	2..Sewer construction	E. L. Williams, City Clerk.
Minn.	St. Paul	10:30 a.m., July	2..Constructing force main sewer	H. W. Austin, Pur. Agt.
Ind.	Gary	July	2..1,264 ft. 12-in. tile and manholes	W. P. Cunningham, Engr.



## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. Y., New York	11 a.m., July	3..	Sewer construction on a number of streets	L. H. Pound, Boro. Pres., Brooklyn
Ill., Chicago	11 a.m., July	3..	Constructing drains	Bd. of Local Improvements, City Engr.
Mo., Chillicothe	noon, July	3..	Constructing sewers	A. L. Stapleton, City Clerk.
Ia., Ankeny	July	3..	13,000 ft. vit. pipe sewer and disposal plant	O. E. Michaelis, City Clerk.
Ind., Kendallville	8 p.m., July	3..	Constructing two sanitary sewers	A. A. Johnson, City Clerk.
Ariz., Flagstaff	July	3..	Sewer extensions; \$55,000 available	Board of Public Works, City Engr.
Ia., Davenport	July	3..	Storm drain; cost, \$80,000	City Architect.
Ia., Dubuque	8 p.m., July	5..	750 ft. 8-in. sewer	S. Ashman, Dir. P. Service.
Ohio, Cleveland	noon, July	5..	Brick sewer	A. F. Ittner, Village Clerk.
O., Coshocton	noon, July	5..	Sanitary sewer construction	Village Clerk.
Minn., Cass Lake	5 p.m., July	5..	Sewer construction	Comnr. of Engineering.
N. Y., St. Johnsville	4 p.m., July	6..	2,000 ft. 18 and 29-in. storm sewers	E. T. Perkins, 1210 First Natl. Bank Bldg., Chicago, Ill.
Ohio, Cleveland	noon, July	6..	Constructing outfall sewer	E. W. Sayles, City Engr.
Ill., Savannah	July	6..	Drainage improvements to include pump house and appurtenances, machinery, electrical apparatus, etc.	A. H. Reid, Co. Comr.
N. Y., Watertown	8 p.m., July	6..	870 ft. 10-in. and 215 ft. 8-in. tile sewer, with appurt'n'c's	G. P. Winn, Engr., Nashua, N. H.
Mich., Flint	9 a.m., July	6..	County drain construction	J. F. Druar, Engr., Commercial Bldg., St. Paul.
N. H., Claremont	July	6..	1,000 ft. of sewer 6 ft. deep	J. J. Carroll, City Clk.
Minn., Pine City	7:30 p.m., July	7..	1,750 ft. vit. sewers	Jess F. Warda, City Clerk.
Kan., Neodesha	July	9..	Storm sewer; cost, \$5,000	J. J. Carroll, City Clerk.
Neb., Plattsmouth	5 p.m., July	9..	Sewer extension	O. E. Bogart, City Recorder.
Kan., Neodesha	July	9..	Storm sewer construction	Passaic Valley Swge. Comn.
Tenn., Erwin	7 p.m., July	10..	Storm sewer construction	A. H. Terry, City Engr.
N. J., Newark	July	10..	Foundations and c'n'ctions for pump sta. in Wallington	Morgan Engrg. Co., Memphis, Tenn.
Conn., Bridgeport	8 p.m., July	12..	Constructing pump house and furnishing sewage pumping equipment	H. S. Zemlock, City Clerk.
Miss., Greenville	July	12..	133 miles of drainage ditches	G. C. Smith, Co. Aud.
Wis., Neenah	2 p.m., July	12..	Sewer construction	R. E. Humphrey, Co. Auditor
Minn., Cambridge	1 p.m., July	14..	Drainage work	Nicholas Thomey, Co. Aud.
Ia., Glenwood	July	18..	Drainage improvements	L. Panton, Pres. Bd. of P. W.
Minn., St. Cloud	9 a.m., July	20..	8,850 ft. tile drains	
Okla., Billings	Aug.	1..	Sewer, waterwks. system and light. plant; cost, \$60,000	
WATER SUPPLY.				
Minn., Lake Crystal	June	29..	Laying water mains	David Evans, Vil. Clk.
Mich., Detroit	11 a.m., June	30..	Machinery and valves for lock in St. Marys Falls Canal	U. S. Engineer's Office.
N. D., Fessenden	July	1..	Sewers and water works system; cost, \$55,000	T. R. Arnold, Engr., Minot.
N. D., Leeds	July	1..	Water works and sewers; cost, \$35,000	T. R. Arnold, Engr., Minot.
Ont., Strathroy	July	1..	Water works improvements to cost about \$20,000	Kerry & Chace, Engrs., Confederation Life Bldg., Toronto
O., East Liverpool	July	2..	Miscellaneous piping, ash conveyor, damper regulator and other equipment for new water works pumping station	P. Doherty, Dir. Pub. Service
Kans., Augusta	July	2..	Improving water works, including filter equipment, centrifugal pumps, filter house addition and pump pit; also laying 3,600 ft. c.-l. pipe	C. W. Hawes, City Clerk
Ill., Farmington	8 p.m., July	2..	Improving and extending water works system, to include deep well, pumping station, steel tower, or concrete standpipe, deep well pump, pipe valves, etc.	G. F. Hubbard, City Clerk.
N. D., Towner	July	2..	Reservoir construction	A. M. Berket, City Audr.
Wis., Shawano	7:30 p.m., July	2..	High pressure, non-condensing, heavy duty Corliss engine and 3 motor-driven centrifugal pumps	B. Royer, Pres., Elec. Light & Water Comn.
N. D., Hazen	8 p.m., July	2..	Constructing water works	Geo. Freer, Village Clerk.
Ia., Waverly	5 p.m., July	2..	Imprvts. to waterworks and hydro-elec. plant, including 1,200 ft. 12-in. c. l. mains, valves and specials, and 1,200,000-gal. reinforced concrete reservoir	H. R. Van der Veer, City Clk.
O., Chardon	July	3..	Installing water works system	F. S. Parks, Village Clerk.
Ill., Chicago	11 a.m., July	3..	Laying water service pipes	Bd. of Local Impvts.
Ill., Lockport	2 p.m., July	6..	Water main extension	Board of Local Impvts.
Ky., Winchester	July	6..	Water works system	C. B. Tracy, City Clerk.
N. Y., New York	2 p.m., July	6..	Cast iron special castings	Wm. Williams, Comnr. Water Supply, Gas & Elec. Water Supply.
N. Y., New York	11 a.m., July	10..	Furnishing and installing laboratory fittings	P. G. Phillips, Comnr. P. W.
Minn., Duluth	11 a.m., July	10..	20,000,000 gals. electric cent. pump	John Bonifas, Co. Aud.
Ind., Portland	9 a.m., July	10..	Water filtering and softening plant, walks, etc., at new Court House	Geo. Fetherstone, Sec. Board of Water Supply
N. Y., New York	11 a.m., July	10..	Improvements on Ashokan reservoir and Catskill aqueduct, including superstructure over drainage chamber, chemical and bacteriological laboratory and vitrified pavement and tar mastic in Kensico aerator	Walter Brewer, Village Clerk.
Wis., Cuba	8 p.m., July	12..	Drilling deep well and installing new pump and motor	Board of Contract & Supply.
N. Y. Cohoes	2 p.m., July	13..	Two motor generators and other electrical equipment for pumping station	Bd. of Water Supply, Municipal Bldg., New York.
N. Y., New York	11 a.m., July	17..	Shandaken tunnel, 18 miles long and 10 ft. 3 ins. x 11 ft. 6 ins., lined with concrete	L. Panton, Pres. Bd. of P. W.
Okla., Billings	Aug.	1..	Waterworks, light. and sewer systems; cost, \$60,000	
MISCELLANEOUS.				
O., Ashtabula	1 p.m., June	29..	One 2-ton self-dumping motor truck	J. W. Prine, City Mgr.
Mass., Boston	noon, June	29..	Constructing sanitary building, shelter and concrete pavement in playground	Park & Recreation Dept.
Tenn., Memphis	June	30..	Furn. and delivering steel cable and wire strand rope	Mississippi River Comn., U. S. Engr. Office, Custom House.
Fla., Arcadia	June	30..	Drainage ditches, requiring about 440,000 cu. yds. excavation	Cravens & Kimmel, Engrs., Parker Building
Mich., Detroit	June	30..	Machinery and valves for Fourth Lock, St. Mary's Falls Canal	U. S. Engr. Office.
O., Columbus	noon, July	1..	Constructing steel dredge; to be three-fourths-yard portable, oil burning	F. R. Fauver, Supt. of Public Works, State House Annex.
Ind., Madison	1 p.m., July	2..	One portable gyratory rock crusher with a capacity of 10 tons to 29 tons per hour	Charles S. Dibler, Co. Audr.
Mo., St. Louis	July	2..	190,000 cu. yds. earth work in Mascatine Island levee dist., Iowa	Mississippi River Comn., International Life Bldg.

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. D.	Mott.....	2 p.m., July 2..	1 large grader, 6 road drags and 6 Fresno or Buck scrapers .....	E. C. Roberts, Co. Aud.
Tenn.	Memphis .....	July 2..	Furnishing concrete mixer, engines, belt elevators and conveyors, etc. ....	Miss. River Comn.
N. J.	Trenton .....	noon, July 2..	Dredging section of proposed inland waterway.....	John C. Payne, Ch. Engr.
Ariz.	Clifton .....	July 2..	Concrete and slag retaining wall.....	M. Danenhauer, Town Clerk
N. Y.	New York .....	10:30 a.m., July 2..	Reconstructing subway manholes .....	Robt. Adamson, Fire Comr.
D. C.	Washington .....	July 9..	Reinforcing material and structural and miscellaneous steel, iron and brass work .....	Supt. of Prisons, Dept. of Jus.
Miss.	Vicksburg ....	11 a.m., July 11..	1,265,000 cu. yds. of levee work.....	3rd Mississippi River District, P. O. Box 404.
Tex.	San Antonio ....	4 p.m., July 12..	Constructing retaining walls.....	Fred Fries, City Clerk.
N. Y.	Albany.....	noon, July 13..	Portable package freight conveyor for barge canal terminals at Rochester, Utica and Schenectady.....	W. W. Wotherspoon, Supt. Pub. Works
N. Y.	Buffalo.....	11 a.m., July 16..	Constructing stone and concrete superstructure on breakwater .....	U. S. Engineer, Buffalo.
Mont.	St. Ignatius.....	July 18..	Reclamation work to include 60,000 cu. yds. excavation and 100,000 sq. ft. concrete canal lining.....	U. S. Reclamation Service.

## STREETS AND ROADS.

**Little Rock, Ark.**—State highway commission has called a convention for July 24-26 at Eureka Springs for the purpose of considering plans for a highway from Joplin, Mo., to New Orleans.

**Little Rock, Ark.**—The state highway commission set apart \$125,000 for the purpose of building a road from Argenta to the new military training camp. The surveys has started and contract will be awarded July 2.

**Pine Bluff, Ark.**—An ordinance was passed appropriating \$500 per year for ten years, beginning in 1920, to aid in the cost of the work in paving district No. 43.

**Auburn, Cal.**—City Trustees rejected city's street paving bids; too high. It is probable paving will go over until Fall.

**Fresno, Cal.**—Resolution adopted to pave Iowa St., between First and Ninth, and White's Bridge and B to Tehama and El Dorado; also calling for bids for sewer Arlington Heights and intention to lay walks and curb blocks 55 and 56 in East Fresno.

**Placerville (El Dorado Co.), Cal.**—All rights of way for the State highway between Whiterock and Shingle Springs have been secured after two years of work by the committee appointed by the Supervisors.

**Redding, Cal.**—Inwood Division in Shasta county organized to construct permanent highway and laterals to call \$60,000 bond election.

**San Diego, Cal.**—Common Council ordered improved Walnut Ave., Albatross St., Upas St., Brant St., Thorn St., Curlew St. and Spruce St.

**Oroville, Cal.**—A Good Roads convention to further a bond issue for roads throughout Butte county, is being advocated by the Paradise Development Board.

**Greenwich, Conn.**—Chairman Bonding Committee, Wilbur S. Wright, receiving bids June 29 for \$50,000 highway improvement bonds.

**Zephyrhills, Fla.**—Special Roads District No. 4 of Pasco county voted a bond issue of \$10,000, to be used in completing the National Highway in that district to the Hillsborough county line.

**Alma, Ga.**—Bacon county voted in favor of issuing the following bonds: Doad \$60,000, court house \$30,000, jail \$10,000. Chas. Striplin, County Clerk.

**Atlanta, Ga.**—Plans for rebuilding the city's burned district have been formulated by the commission of citizens appointed for that purpose and have been approved by the property owners. The plans provide for widening the principal streets, extending streets which are now too short, establishing parks and playgrounds. Approximately \$80,000 will be raised by assessing property owners along the principal streets of the district, and the city of Atlanta and county of Fulton will be called on to pay the remainder of the expense of carrying through the plan.

**Rome, Ga.**—S. T. Polk, and J. M. Wyalt of Menlo are in this city in the interest of the Georgia-Alabama Highway from Rome to Mentone. Citizens of Menlo are endeavoring to raise \$3,000 by private subscription to apply toward the building of a road up Lookout Mountain from Menlo to the Alabama line. Alabama authorities have assured

them that if this road is built it will be joined by a good road from the line to Fort Payne.

**Thomson, Ga.**—Council plans to extend paving on Main St. with brick.

**Springfield, Ill.**—State officials plan hard road improvements for 1917 and 1918 with the \$7,399,958 fund appropriated by Legislature.

**Springfield, Ill.**—Commissioner Hamilton introduced sidewalk ordinance on Vine St. west of Walnut St., and on the east side of College St. at the north side of Pine St.

**Columbia, Ind.**—J. F. Wild & Co. took \$24,000 in Whitley county road bonds at par.

**Columbia City, Ind.**—Bids received July 15, 1917, at 1 p. m., by treasurer of Whitley county, for sale \$3,842 highway improvement bonds, 4½ per cent., ten years. Forest S. Deeter, Treasurer.

**Delphi, Ind.**—Five issues of Carroll county highway bonds—\$13,600, \$12,500, \$7,800 and \$11,600—were sold the first two to C. E. Flora for premiums of \$11 and \$46 respectively; Wm. Gucklen bought \$11,600 at a premium of \$34.80; Breed, Elliott & Harrison took \$12,000 at a premium of \$2 and the Fletcher Bank took \$7,800 at a premium of \$1.25.

**Franklin, Ind.**—An issue of Johnson county highway bonds, \$6,500, 4½ per cent., ten years, was sold to H. D. Bassett, of Indianapolis, for premium of \$16.26.

**Indianapolis, Ind.**—Ordinance introduced authorizing the Board of Public Works to improve Orange St. from Downey St. to Madison Ave. with curb and cement walks.

**Irvington, Ind.**—Marion county council unanimously passed an ordinance for a bond issue of \$200,000 and appropriated that amount to construct one new road leading to Ft. Benjamin Harrison and to put other roads leading into the post in repair.

**Lafayette, Ind.**—Bids received July 6, 1917, at 2 p. m., by Treasurer of Tippecanoe County, for sale, \$4,700 and \$4,700 highway improvement bonds, 4½ per cent., ten years. Harry G. Leslie, Treas.

**Marion, Ind.**—Country Treasurer Luther Wood sold the issues Grant county road improvement bonds as follows: George Webster, of Marion, the \$7,236 for \$15.75 premium. The Grant Trust & Savings Co., of Marion, Ind., the \$5,643 issue for \$31.60 premium. Breed, Elliott & Harrison the issue of \$15,800, premium \$8.

**Noblesville, Ind.**—Bids received July 5, 1917, at 11 a. m., by Treasurer of Hamilton County, for sale, \$4,880 and \$6,820 highway improvement bonds, 4½ per cent., ten years. L. G. Heiny, Treas.

**Rushville, Ind.**—Bids received July 3, 1917, at 2 p. m., by Treasurer of Rush County, for sale, \$16,320 and \$10,600 highway improvement bonds, 4½ per cent., ten years. John O. Williams, Treas.

**Salem, Ind.**—The Bank of Salem, Salem, Ind., was the successful bidder for a \$5,400 issue Washington county highway bonds, paying a premium of \$12. Bonds bear 4½ per cent. interest and cover period of ten years.

**South Bend, Ind.**—Bids received July 10, 1917, at 11:30 a. m., by Treasurer of St. Joseph County, for sale, \$9,000 highway improvement bonds, 4½ per cent., ten years. Edward F. Keller, Treas.

**Terre Haute, Ind.**—Vigo county highway bonds, two, \$77,000 and \$58,000, 4½ per cent., twenty years, were sold to J.

F. Wild & Co., of Indianapolis, for total premium of \$57.

**Wabash, Ind.**—Wabash County's \$10,000 bond issue for road improvements was awarded to the Lafontaine Bank, Lafontaine, Ind., for \$20 premium and accrued interest. A \$4,000 issue road bonds was sold to Peter Schmalzried for \$15 premium.

**Hiawatha, Kan.**—Council plans to pave portion Kickapoo St. J. W. Liebengrod, clerk.

**Alexandria, La.**—Bids received building 15 miles roads in Road District No. 8 were rejected by board of supervisors. New bids. J. W. Texada, pres.

**Great Neck, L. I.**—Petitions were approved by the Town Board for the construction of concrete sidewalks on Seventh St., from Kensington to Railroad Aves., and on Railroad Ave., from Seventh to the station Plaza.

**Dexter, Me.**—Town will discuss appropriation for use in repaving the highways and sidewalk.

**Northboro, Mass.**—City plans to repave portion Main St., about \$10,000.

**Waltham, Mass.**—Mayor signs Prospect St. repair order, also insures the rebuilding of that street this year at cost of \$12,000.

**Waltham, Mass.**—Orders for extension of River St. drain beyond School Ave.; for a walk in Bright St., were signed by the Mayor.

**Lansing, Mich.**—City voted in favor of issuing \$75,500 paving bonds. J. A. Parsons, City Clk.

**Pontiac, Mich.**—"See Sewerage."

**Pontiac, Mich.**—City Commission plan to construct cement curb and gutter in Henry Clay Ave., from Franklin Blvd. to Green St., at an estimated cost of \$1,080.67; in Exchange St., from Pike St. to Orchard Lake Ave., at \$614.25; in Mary Day Ave., from Franklin Blvd. to Green St., at \$1,080.03. Clifford W. Ham, City Clerk.

**Pontiac, Mich.**—City commission plan to construct cement curb and gutter in Washington St., from Oak St. to South Johnson Ave., at an estimated cost of \$1,449.92; in Palmer St., from Orchard Lake Ave. to Huron St., at \$2,313.94; in Green St., from Huron St. to Orchard Lake Ave., at \$2,905.46; in Hill St., from Pike St. to Auburn Ave., at \$1,627.50. Clifford W. Ham, City Clerk.

**St. Paul, Minn.**—City Council authorized Purchasing Agent Austin to advertise for bids on material to pave Ninth St. from Smith Ave. to Summit Ave. and College Ave. from Sixth St. to Smith Ave.

**St. Paul, Minn.**—County Surveyor Joseph H. Armstrong announced a \$30,000 road improvement program will be carried out in Ramsey county in the next three months, and approximately \$6,000 worth of oiling will be done. These roads will be resurfaced: North St. Paul road, from the St. Paul city limits, one mile north; Edgerton road, for two miles; Lexington Ave., for half a mile; New Brighton Rd., for two miles, and Rice St., for one and a half miles.

**Marshfield, Miss.**—Webster County Board of Supervisors contemplates issuing the following road bonds: Supervisors Dist. No. 1, \$50,000; Supervisors Dist. No. 2, \$4,000.

**Plentywood, Mont.**—Sheridan County Commissioners are discussing here improvements on various roads in this end of the county.



**Camden, N. J.**—Street committee made plans for a \$15,000 bond issue to be recommended to city council for the filling in and elevation of State St., in East Camden.

**Lodi, N. J.**—Council decided to widen Main St.

**Gloversville, N. Y.**—Council requested City Attorney Wesley H. Maider to prepare proper resolutions for the grading of Jeffers St.

**New Rochelle, N. Y.**—Council ordered penetration macadam laid on Crescent Ave. from Warren St. to Webster Ave., at a cost of \$4,000.

**New Rochelle, N. Y.**—Council ordered Maple Ave. paved at a cost of \$400.

**Tarrytown, N. Y.**—Village Clerk J. Wyckoff Cole receiving bids July 5, 3 p. m., for \$180,000 street improvement bonds.

**Watertown, N. Y.**—See "Sewerage."

**Watertown, N. Y.**—Board of Pub. Wks. voted to pave Pearl St. from Moulton to Purdy St., designating the trolley tracks in the center of the highway.

**Watertown, N. Y.**—Board of supervisors voted an appropriation of \$98,600 for roads under the county system which have been graded, a total mileage of 49.3.

**Biltmore, N. C.**—Bonds for the building and improving of streets in South Biltmore were sold to the Branche Bond Co. of Chicago.

**Winston-Salem, N. C.**—The Wachoria Bank & Trust Co. of Winston-Salem purchased the Forsyth County \$50,000 road bonds. J. M. Lentz, Clk., County Comrs.

**Akron, O.**—City will improve North Howard St. by grading, curbing, paving, constructing sidewalks, storm sewer, sanitary sewer, together with laterals.

**Cleveland Heights, O.**—Village Clerk H. H. Canfield receiving bids July 16 for \$5,000 street improvement bonds.

**Chesterhill, O.**—Village Clerk Oliver Edgerton receiving bids July 6, noon, for \$7,000 intercounty highway improvement bonds.

**Columbus, O.**—Clerk Franklin County Commissioners John Scott receiving bids June 30 for \$124,000 road coupon bonds.

**Gallipolis, O.**—Messrs. Seasongood & Mayer of Cincinnati were the successful bidders for the \$16,000 street improvement bonds.

**Hamilton, O.**—Council adopted resolution instructing the service director to scarify, grade and gravel and roll Wilson St.

**Hamilton, O.**—Council adopted resolution ordering sidewalks constructed on the west side of Central Ave. between Chestnut St. and South Ave., where there are no sidewalks at present.

**Kent, O.**—Village Clerk Fred Beethle receiving bids July 16 for \$3,000 street improvement bonds for Village Park.

**Massillon, O.**—City planning to repave South Erie St. from Wetmore St. to West Walnut St. Estimated cost with brick \$9,200, concrete, 10 ins. deep \$10,000.

**Napoleon, O.**—Napoleon State Banks of Napoleon was the successful bidder for the \$53,000 road improvement No. 169 bonds, in Henry County. G. E. Rafferty, Co. Aud.

**West Unity, O.**—Village plans to improve portion Michigan Ave.

**Darby, Pa.**—Borough Secretary Edwin R. Franklin receiving bids July 2 for \$15,000 street improvement bonds.

**Germantown, Pa.**—Both branches of Councils have passed bills to open Hartwell Ave. from Ardleigh St. to the Reading Railway, and Wyncote Ave. from Wister St. to 65th Ave.

**Germantown, Pa.**—Select Councilman Ulrich of the 43d Ward has introduced bills to pave Limekiln pike from Spencer St. to Chelton Ave., and to regrade Limekiln pike from Ogontz Ave. to Church lane.

**Germantown, Pa.**—Common Councilman Pringle Borthwick has introduced the following bills: To open Ross St. to its full width from Springer St. to Philadelphia St.; to lay sidewalks along Fernhill Park on Morris St. from Berkley St. to Abbottsford Ave., and Abbottsford Ave. from Morris St. to McKean Ave.; to pave Mount Airy Ave. with bituminous macadam and brick gutters from Jefferson St. to Lincoln drive.

**Germantown, Pa.**—Both branches of City Councils have passed a bill to revise the lines and grades on the east side of Wissahickon Ave. from a point 100 feet south of Bristol St. to Roberts Ave. The board of surveys is now considering the widening of Wissahickon Ave. from Roberts Ave. to Walnut lane.

**Harrisburg, Pa.**—Adjutant General Thomas J. Stewart has requested State Highway Commissioner Black to proceed at once with the construction of 6½ miles of improved roads in the military reservation at Mt. Gretna. These roads are to be built with all possible speed, so that they may be in shape for the mobilization of the National Guard. Chief Engineer William D. Uhler and Second Deputy State Highway Commissioner George H. Biles left at once for Mt. Gretna for an inspection of the ground and already are at work on plans for the rapid completion of the work. National Guard officials will establish a large commissary department at the scene of the work and the camp will take on a military aspect from the first. State Highway Department road equipment already has been ordered to Mt. Gretna and by Monday a large force of men will be located there. All the resources of the State Highway Department will be made available for the early completion of these roads.

**Johnstown, Pa.**—Council placed on the calendar an ordinance providing for the paving of Highland Ave. from Village St. to the end of the existing paving at Wheat St. with vitrified brick on a concrete base.

**Pottsville, Pa.**—City Council voted to pave Centre St. north and south of the wood block paving now in. Bids will be advertised for not only on all kinds of wood block, but also on vit. brick and other sorts of street paving.

**Sayre, Pa.**—Borough Council plans repaving of Elmer Ave. from Stevenson St. to Mohawk St.

**Sayre, Pa.**—See "Sewerage."

**Wilkes-Barre, Pa.**—A request from the property owners on South Hancock St. between Lehigh and Metcalf Sts. for the circulation of a petition for paving was submitted to council.

**Providence, R. I.**—Council passed resolution adding \$1,000 to the appropriation for paving Brook St.

**Saluda, S. C.**—County plans to build 257 miles road between Ridge Springs and Greenwood county line.

**Madisonville, Tenn.**—Monroe county receiving bids July 9 for \$175,000 road bonds.

**Dallas, Tex.**—The Dallas County Commissioner's Court decided upon an application for both State and Federal aid in construction of the Dallas-Fort Worth Rd. as a part of the Dallas-Mineral Wells Highway. A portion of the road is provided for in the \$500,000 road bond issue. That issue provided for concrete roadway on four miles of the road which is subject to overflow, and also for steel or concrete bridges. The possibility of getting Federal aid is based on the likelihood that the road will form a part of the transcontinental highway which, in Texas, would have its terminal at Texarkana and El Paso.

**Galveston, Tex.**—City Commissioners appropriated \$5,400 for the purchase of two carloads of Tarvia for treating approximately three miles of the city's streets bids to be advertised at once. City Engineer George H. Willits.

**Pittsburg, Tex.**—County voted bonds to build roads Nales and Omaha Road Districts, \$30,000.

**Charleston, W. Va.**—Attorney General England has approved the Mingo county road bond issue for \$1,000,000, recently approved at a special election by the voters of the county.

**Chinook, Wash.**—Pacific county has assessed by more than a two-thirds majority the \$274,000 bond issue for the improvement of roads.

**North Yakima, Wash.**—The Yakima County Comrs. have advertised for bids for improvement of three miles of permanent highway between Union Gap and Parker. The bids asked for asphaltic concrete surface, also for bitulithic. The cost will be about \$28,000.

**Spokane, Wash.**—The secretary of agriculture has authorized the location survey of a section of the first project in road construction submitted under the "National Forest Section" of the federal aid road act, which provides for actual construction of roads by the federal government. The proposed road on which action is taken is in the Apache national forest, Greenlee county, Arizona. The preliminary estimate of the cost of construction of the 71 miles of road to be surveyed is \$342,500. An additional 29 miles of road in Apache county will be necessary to complete the project, and, according to the preliminary estimate, will bring the total

cost to \$420,000. Approval of the plans for the survey was based upon the industrial resources which will be opened up and also upon the offer of one-half co-operation by Greenlee county.

**Waterville, Wash.**—Plans outlined by County Engr. Robt. F. Foster for a comprehensive scheme of road development work in Douglas County to be undertaken during this year and next, have been accepted by the county comrs. About \$250,000 will be expended in this work. Bids are now being called for for the construction of a highway in Local Improvement District No. 3, including the construction of two 16-ft. bridges. The estimated cost is placed at \$13,500.

**Fond du Lac, Wis.**—Fond du Lac county board, has appropriated \$6,000 for the repair and rebuilding of the Fond du Lac Oshkosh concrete highway. It is proposed to repair the joints in the fourteen foot part of the highway from the city limits to the beginning of the nine foot section at Lakeshore drive with bituminous mixtures, and widen and resurface the nine foot section to fourteen feet as far as Minnesota Ave. From this point on to the junction with the new piece of concrete the old concrete is to be resurfaced with a bituminous mixture, and provided with new gravel shoulders. The distance to be repaired is about a mile.

**Worland, Wyo.**—City plans paving three blocks in the business district.

**Brantford, Ont.**—Council plans to extend Clarence St. City Engr. T. Harry Jones.

**Radisson, Sask.**—Secretary-Treasurer D. J. Gold receiving bids July 15 for the following bonds: Sidewalk, \$7,991.70; curbs, \$2,969.12.

**Ste. Genevieve de Batiscan, Que.**—Municipal council considering graveling of roads at a cost of \$30,000. Clerk and Secretary, Tancrede Frudel.

#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Phoenix, Ariz.**—Low bids received by city for improving Washington and Roosevelt Sts. from D. James, \$33,600.

**Fresno, Cal.**—\*Thompson Bros. was awarded the contract to grade, curb and oil Madison Ave.

**Los Angeles, Cal.**—Board of Pub. Wks. to \*Johnston & Grolls, grading, oiling, cement sidewalks, concrete gutters, etc., Baltimore St. Horace E. Terris, Secy.

**Napa, Cal.**—For the construction of concrete highway from Greenwood Hill to the Solano county line the Napa county supervisors awarded a contract totaling \$36,942.

**Quincy, Cal.**—\*Plinco Copper Co., by county, building highway Beckwith District.

**Ventura, Cal.**—\*C. H. Hudson Trust & Savings Bldg., Los Angeles, at \$14,081, by county, paving Dist. 11, Ventura county highway.

**Washington, D. C.**—The \*Barrett Co., 36th and Grays Ferry Rd., Philadelphia, Pa., roads and drainage various army mobilization camps, order U. S. Govt.

**Palatka, Fla.**—\*Cornwell Construction Co., Tampa, at \$71,000, by county, building roads.

**Berwin, Ill.**—\*H. G. Goelitz, 810 North Blvd., Oak Park, by city, paving Cuyler and Highland Aves.

**Catlin, Ill.**—\*H. C. Finley, Hooperston, Ill., Paving Engr. W. S. Dillon, Court House, Danville, Ill.

**Joliet, Ill.**—The R. H. Conway Co. presented the only bid for the contract for paving Third Ave. and Wilson St., which was referred to the city engineer for investigation.

**Oak Park, Ill.**—\*I. Goelitz, 803 North Blvd., by board of local improvement for paving alley assessment No. 487 (two jobs).

**Rock Island, Ill.**—Board of local improvements awarded to \*McCarthy Improvement Co. for the paving with brick of Forty-first St. from Railroad to Ninth Ave.

**Springfield, Ill.**—The following State aid contracts were awarded by the State Highway Commission on June 13: Ford county; Sec. C; Route 5; type, concrete; contractor, \*Public Service Construction Co., Omaha; amount, \$9,341.00. Grundy county; Sec. D; Route 3; type, concrete; contractor, \*Booth, Nicholson & Gilchrist, Gardner, Illinois; amount, \$14,109.70. Peoria county; Sec. E; Route

2; type, concrete; \*Canterbury Bros., Peoria, Illinois; amount, \$30,252.68.

**Anderson, Ind.**—Madison county commissioners have let contracts as follows: Cox rocmac road, Fall creek township, \*W. J. Neidhart, Pendleton, Ind., \$38,450; two rocmac roads in Monroe township, \*J. D. Pearson & Co., Pendleton, Ind., \$66,828.

**Crown Point, Ind.**—\*James Brannock, of Lowell, Ind., was the successful bidder for a Lake county road contract at \$8,800.

**Indianapolis, Ind.**—Board of public works let the following contracts: Morris St., from Meridian to Madison, cement walks, to \*J. Harry Roberts, at \$1.00 per ft.; Highland Ave., from Marlowe to Michigan, asphalt curb, to \*Union Asphalt Construction Co., at \$4.60 per ft.

**Indianapolis, Ind.**—Bd. of Public Wks. let the following contracts: 30th St., from Parkway to 29th, cement walks, at \$1.57 per ft.; and 43rd St., from Wash. Blvd. to Central Ave., cement walks, to \*Chas. Schwert, at \$1.03 per ft.; 30th St., from 4½ west of Parkway to 29th, asphalt and curb, to \*Amer. Const. Co., at \$9.50 per ft.

**Vincennes, Ind.**—Knox County Commissioners have awarded to \*S. R. Adams & Co., of Princeton, Ind., to build the Main St. road with Medora vitrified brick at \$48,396.

**Cedar Rapids, Ia.**—\*J. B. Ford & Son, 221 First Ave. W., alley paving 3,000 sq. yds. concrete, L. J. Storey, City Clk.

**Clarinda, Ia.**—\*J. S. McLaughlin & Son, Red Oak, Ia.; paving 17th to 14th, Clark and Main Sts. T. A. Wilson, City Mgr.

**Eldon, Ia.**—\*Ford Paving Co., Cedar Rapids, by city, at \$2.20 per yd., 12,750 yds. paving.

**Wichita, Kan.**—City let contract paving streets to \*E. C. Stewart, \$17,510; Security Paving Co., 1004 Orear-Leslie Bldg., Kansas City, Mo., \$27,765.

**DeKiddler, La.**—The police jury of this parish has let road contract to \*N. A. Dawson for \$257,447.44; includes the furnishing of right of ways, building of bridges culverts and all the dirt work on the following roads: Ludington, Merryville, Sugartown, Longville Spur, or approximately 155 miles of road.

**Bliddeford, Me.**—Contract let to build the new piece of state highway on the Pool Rd., which this year will take in that part of the road at the Pool known as the "neck" to the \*Hassam Pavement Co.

**Boston, Mass.**—City awarded \*Coleman Brothers for laying street asphalt in Turner St., Waldo Terrace, Parkland St., South St. and North Beacon St., Brighton, at a cost of \$75,063. Work to be done by Nov. 15.

**Boston, Mass.**—Board of Public Works awarded \*Thomas Burke for relaying water pipes in Child St., West Roxbury, at \$1,235.

**Dartmouth, Mass.**—\*Farrello & Co., 31 North Sq., Boston, Mass., let by Wm. B. Collins, single highway surveyor for Dartmouth St. road.

**Hingham, Mass.**—\*W. P. Loud & Sons, Quincy, Mass., for state highway in Hingham, Commonwealth of Massachusetts, highway commissioners in charge, 212 State House, Boston.

**Mattapoisett, Mass.**—\*B. F. Watkins, 500 Acrosnet Ave., New Bedford, by State Highway Comm., Boston, surfacing roads.

**Pontiac, Mich.**—City Commission let work for paving under the three railroad bridges on Orchard Lake Ave., Pike and Lawrence Sts., to \*James H. Baker & Sons.

**Three Rivers, Mich.**—\*S. Reed, Road sec. 10 Lockport township, private plant owner, Sheffield Car Co. Care F. D. Merrill, Three Rivers.

**Ely, Minn.**—City Council awarded to \*Victor Nelson of Superior a sidewalk and gutter contract for \$9,030.

**Rochester, Minn.**—\*Fielding & Shepley, 216 University Ave., St. Paul, Minn., and Teller Bros., Rochester, paving 1st and State Sts. A. F. Wright, City Clk.

**Clarksville, Miss.**—City Comrs. let contract paving 30,000 sq. yds. asphaltic concrete, 700 lin. ft. curb and gutter, inlets, etc., to \*Memphis Asphalt & Paving Co., 811 Falls Bldg., Memphis, \$66,000.

**Caruthersville, Mo.**—\*J. H. Hinerman, Springfield, Mo., paving Sixth St., Seventh St., and Carleton Ave. Engr., B. O. Bennert, Caruthersville.

**Joplin, Mo.**—\*C. B. Anderson, for paving Sergeant Ave. from 1st to 4th Sts., and for paving alley between Moffet and

Sergeant from D to E Sts.; the alley between Sergeant and Jackson from C to D Sts., and the alley between Virginia and Pennsylvania from 9th to 10th.

**Helena, Mont.**—City let contract paving portion Placer Ave. to \*D. C. Sweeney, \$12,282.

**Beatrice, Neb.**—\*Abel Construction Co., Lincoln, paving in Dists. 4, 25, 26 and 27, \$1.90 per yd. sheet asphalt, \$1.70 asphaltic concrete.

**Portsmouth, N. H.**—\*Warren Bros., 142 Berkley St., Boston, at \$51,315, by Bd. Pub. Wks., paving Middle and Daniel Sts.

**Morristown, N. J.**—Bd. of Chosen Freeholders let contracts for the construction of 14 sections of roads: Madison Ave., in this place, from South St. easterly for about 2,000 ft., repaving the center of the street with amiesite and the side with brick; \*Gary Construction Co., of Morristown, for \$27,635. The other repairs included cleaning of gutters, repair of shoulders, scarifying and in some cases spreading of stone on the Morristown - Bernardsville, Morristown - Whippany, Morristown - Mt. Freedom, Morristown - Mendham, Madison - Afton, Madison - Green Village, Pleasantville - Myersville, Montville - Towaco, Dover - Woodport, Whippany - Parsippany, Mt. Freedom - Succasunna, Main St., Rockaway, Passaic Ave., Chatham; Valley Rd., in Passaic Twp.

**Roosevelt, N. J.**—\*Matthew A. Herman for pavement of E. St. from Woodbridge Ave. to Selmour St. Walter V. Quinn, Boro. Clerk.

**Trenton, N. J.**—\*C. A. Reed & Co., 623 Monmouth St., Trenton, sidewalk, curb and liquid asphalt. Mahlen, Stackey & Cadwalder, Park Engrs. A. Swan, City Hall, 25,889 sq. yds. liquid asphalt.

**Trenton, N. J.**—\*C. A. Reid & Co., 623 Monmouth St., by city, paving portion West State St., \$21,000.

**Ventnor City, N. J.**—City let contract paving streets, sheet asphalt, to \*W. Quinlan, Delaware and Mediterranean Aves., Atlantic City, \$60,000.

**West Orange, N. J.**—\*J. F. Chapman, Newark, N. J., Harvard Terrace improvement, 2,973 sq. yds. asphalt bound macadam \$1.06, 7,144 sq. ft. cement sidewalks, 17 cts.; 1,806 lin. ft. concrete curb, 58 cts.; 4,156 cu. yds. excavation, 84 cts. Charles A. Winston, Town Engr.

**Brooklyn, N. Y.**—Figures were tabulated under direction of Borough President Connolly on bids for highway and sewer improvements. The lowest bids on nine highway contracts amount to \$67,425.71, and the lowest bid on 14 sewer contracts total \$162,756.42.

**Fredonia, N. Y.**—\*Dunkirk Construction Co., 112 Eagle St., Dunkirk, N. Y., paving Orchard St. Arthur Moore, Vill-lake Clerk.

**New York, N. Y.**—\*Louis H. Friedma, 128 E. 123d St., grading, sewer, pavements, etc., 149th St. and Park Ave. Chief Engr., Geo. Kittredge, care N. Y. C. R. R. Co., owners, A. H. Smith, Pres., 70 E. 45th St.

**New York, N. Y.**—Low bids received by M. M. Marks, Boro. Pres., regulating and repaving portion Monroe St. from W. J. Fitzgerald, 547 West 45th St., \$10,872.

**Norwich, N. Y.**—\*Paddleford & King, at \$11,422.70, paving 2,900 ft. concrete. Engr., Robt. S. Waite, City Hall.

**Yonkers, N. Y.**—City council opened bids street improvement ranging over \$200,000. Paving of Saw Mill River road, between Ashburton Ave. and Tuckahoe road, a distance of 1¼ miles, were as follows: Warren Bros., grading, sidewalks, curbs, etc., \$71,965.89; paving with bitulithic, \$96,793; total improvement, \$168,758.89. Thomas Grady, grading, \$66,915.82; paving with small granite blocks, \$174,670—\$241,585.82; with sheet asphalt, \$94,827.80—\$161,743.62. James Oliver, grading, \$77,147.46; paving with small granite blocks, \$157,719.70—\$234,867.16. Molloy & Murray, grading, \$71,919.52; paving with small granite blocks, \$161,056.48—\$235,976. O'Rourke Contracting Co., grading, \$61,626.94; paving with small granite blocks, \$157,003—\$218,629.94; with asphalt block, \$112,886.40—\$174,513.34. Frederick E. Gross & Son, grading, \$77,563.60; paving with granite blocks, \$160,436.40—\$238,000. J. A. Kellock Cut Stone Co., grading, \$80,271.35; paving with granite blocks, \$138,336—\$219,107.35. John O. Weston, grading, \$69,498.20; paving with small granite blocks, \$150,000—\$219,498.20. Joseph L. Cuoza, grading, \$105,200; paving with small granite blocks, \$153,050—\$258,268; with asphalt blocks, \$105,756—\$210,056.

with vitrified brick, \$156,906—\$212,106. Paving of McLean Ave., between South Broadway and Caryl Ave. They follow: James J. Hart Contracting Co., re-regulating street, \$17,524.90; paving with sheet asphalt and granite block on grades, \$56,498—\$74,022.90; with asphalt block, \$70,361.50—\$87,886.40. O'Rourke Co., re-regulating, \$15,206.02; paving with asphalt block, \$71,391.72—\$86,597.74. Warren Bros., re-regulating, \$19,639.85; with bitulithic, \$64,875.65—\$83,913.50. Bids were not let. Will be referred to the property owners to recommend the class of paving. The common council will have the designation of the paving used.

**Athens, O.**—County let contract to \*Barrett Co., Illinois Bldg., Cleveland, surfacing with tar 2 miles. Athens Nelsonville Rd.

**Canton, O.**—County Comrs. awarded contracts for paving Canton Middle-branch road to \*Wise Brothers, of Canton, on a bid of \$38,452.35 for a brick road, with tar filler, and with a combination concrete base and curb; and 12th street northwest extension past Meyer's Lake to the Whipple Rd. was re-let to \*Harry Corl, of Canton, at \$26,396.45 for improving the road with a brick pavement, with tar filler, a slag base and a concrete curb.

**Cleveland, O.**—\*G. E. Whitehouse, 6402 Beaver St., at \$12,138, by city, improving Forest Hill Parkway.

**Jefferson, O.**—\*T. P. Fitzgerald, paving, curb and culverts, \$100,000, Kingsville and Sheffield roads, 4-in. brick paving, concrete base and curb. Engr., Roy N. Case, Court House.

**Mansfield, O.**—County awarded contract to \*Ohio Concrete Constr. Co., at \$50,000, improving three miles Mansfield-Millersburg Rd.

**Mansfield, O.**—\*Ideal Elec. Co., Josh Hursh & Mansfield Elec. Light & Power Co., all of Mansfield, water works improvement. Engr. W. J. Hazelton, City Hall.

**Marysville, O.**—By county commissioners to \*C. Deihl, Milford Center, O., at \$17,200, building Wenper road, Darby and Jerome townships.

**Newark, O.**—\*Kleye & Son & Bolin, Newark, by city, paving and improving Coshocton St., at \$19,669.

**Portsmouth, O.**—\*Sheridan Kirk Contract Co., grading and paving Mums Run Rd., \$25,000. Engr., John Harper, court house.

**Wooster, O.**—County Commissioners let contract paving Burton City Eastern road to \*Lee, Briggs & Anderson, Millersburg, \$20,847.

**Zanesville, O.**—\*Bolin & Howell, grading and paving W. Muskingum Ave. Engr., Carl R. Spencer, Masonic Bldg.

**Dormont, Pa.**—\*Dominik Carpellicel, 130 Main St., Carrick, Pa., paving, curb and sewer, La Salle Ave. W. Liberty to Glenmore Ave. Engrs., Douglas & McKnight, 1315 Union Bank Bldg., Pittsburgh, Pa.

**Ardmore, Okla.**—\*Struble & Mitchell, Pauls Valley, paving by city at \$42,350.

**Roseburg, Ore.**—\*O. T. Larson, Roseburg, by county, paving 4,000 yds. Pacific Highway.

**Tillamook, Ore.**—\*A. Arstall, at \$16,578, by county, building Bayocean highway.

**Chaleroi, Pa.**—\*Hastings & Piper, paving and grading and curb, \$11,076. Ira L. Nickeson, Boro. Clk.

**Edwardsville, Pa.**—\*Bank Construction Co., Bennett Bldg., Wilkes-Barre, Pa., paving Grove St., vit. brick on concrete base, \$21,000.

**Grove City, Pa.**—Borough let to \*J. B. Weaver, Grove City, at \$13,096, paving, curbing and grading Blaine St., Broad St. to Second St., and Second St., Blaine to Erie St. L. I. McKay, Boro. Clerk.

**Hazleton, Pa.**—\*John A. Leffin, resurfacing Vine St. W. B. Gerlach, Supt. of Streets and Public Improvements.

**Johnstown, Pa.**—Council received bids on the construction of the proposed concrete bridge across the Conemaugh River at Walnut St., the lowest being the Hackendorn Contracting Co., this bid including both the new bridge and a temporary structure at Johns St. Price was \$49,767, additional concrete piling, if necessary, \$2 per lineal ft. Other bidders: G. T. Morgan, Johnstown, \$59,342; additional concrete piling, if necessary, \$2.50 per lin. ft. Farris Engrs. Co., Pittsburgh, \$61,000; additional concrete piling, if necessary, \$3 per lin. ft. The bids were referred to City Engr. J. R. Crissey and Council for tabulation.



**Parnassus, Pa.**—Contract let for 3,800 sq. yds. brick paving on concrete base, 2,800 lin. ft. concrete curb and gutter and 600 sq. ft. concrete sidewalk for the borough to \*L. H. Hileman, New Kensington, Pa., at \$20,000.

**Philadelphia, Pa.**—Dept. of Pub. Wks., Bureau of Highways & Street Cleaning, George E. Datesman, pres.; F. C. Dunlap, Chief. Bids were received June 21 on work valued at approximately \$621,800. The estimated cost of the several characters of work are as indicated: Schedule A: Paving—Asphalt (assessment work), \$80,000. Schedule B: Paving—Vitrified block (assessment work), \$17,000. Schedule C: Paving—Granite block (assessment work), \$2,500. Schedule D: Repaving—Asphalt, \$65,000. Schedule E: Repaving—Granite block, \$2,500. Schedule F: Surfacing—Waterbound macadam, \$5,000. Schedule G: Surfacing—Penetration macadam, \$35,000. Schedule H: Resurfacing—Bit. pavement, \$35,000. Schedule I: Curbing and footway work (cost to be paid by the city), \$13,000. Schedule J: Improvement of Bensalem Ave. (n.east Blvd.), \$310,000. Schedule K: Improvement of the Parkway (Broad to 17th St.), \$100,000. The bids are being scheduled and the low bidders will be known within the next few days. Schedule "A"—Asphalt Paving: Chancellor St., from 59th to 60th; Clarkson, from Mascher to 3rd; Etting, from Dickinson to Tasker; Fairhill, from Rockland to Ashdale; Greenway, from 63rd to 64th; Gross, from Arch to Race; Lycoming, from Broad to 16th; Midvale, from Wissahickon to Coulter; Paschall, from 66th to 67th; Rockland, from 5th to 6th; Whitby, from 53rd to Phila. & W. C. R. R.; 5th, from Hunting Park to Bristol; 22nd, from Ritter to Porter. Schedule "B"—Vitrified Block Paving: Price St., from Chew to Sprague. Schedule "C"—Granite Block Paving: Seville St., from Manayunk to Dexter. Schedule "D"—Asphalt Repaving: Thompson St., from Belmont to about 200 ft. east; S. S. Market, from Ludlow to 45th. Schedule "E"—Granite Block Repaving: Darien St., from Walnut to Locust. Schedule "F"—Surfacing Waterbound Macadam: Bridget (Sarah) St., from Walnut Lane to Hermit Lane; Daniel, from Walnut Lane to Hermit Lane. Schedule "G"—Surfacing Penetration Macadam: Fairhill St., from 65th to 66th; Lawndale, from north of Comly to Benner; Laycock, from 77th to 80th; Walnut Lane, from Wissahickon to Daniel; 9th, from Oak Lane to 69th; 47th, from Conshohocken to City Ave.; 64th, from 5th to Fairhill. Schedule "H"—Resurfacing Bituminous Pavement: Isl. and Rd., from Elmwood to Eastwick. Schedule "I"—Curbing and footway work (cost to be paid by city). Schedule "J"—Improvement of Bensalem Ave. (N. E. Boulevard). Schedule "K"—Improvement of the Parkway (Broad to 17th).

**Beaumont, S. C.**—City let contract paving 13,000 sq. yds. and 6,000 ft. curbing to \*Southern Clay Mfg. Co., James Bldg., Chattanooga, Ga. \$21,390.

**Dallas, Tex.**—Board of City Commissioners votes to resurface Jefferson Ave., contract awarded to the \*Bitulithic Co. Mayor, Joe E. Lawther.

**Dayton, Wash.**—Frank Bauers has been awarded the contract for hard surfacing the road toward Turner for the sum of \$6,486.

**Edmonds, Wash.**—Contract for paving Main St. from 5th to 3d, has been awarded by council to \*A. L. Clark & Co., local, for \$1,837.

**Olympia, Wash.**—State Highway Commission let contract to the \*Erickson Construction Co. of Seattle for the grading of a section of the Olympic highway in Jefferson Co., at \$46,130.

**Seattle, Wash.**—Board of County Commissioners received bids for the paving of 5 miles of the Bellevue-Medina-Houghton highway which resulted as follows: \*J. L. Smith, 1475 20th Ave. N., concrete, \$96,000; Sparker Const. Co., concrete, \$159,841; Ferguson Const. Co., concrete, \$104,770, brick, \$199,950. The Ferguson Const. Co. also bid \$163,000 for brick block laid monolithic.

**Spokane, Wash.**—Contract to \*C. M. Payne of Spokane for paving 4-1-3 miles of the Apple Way, east of Spokane, for \$56,270, has been signed by the county comrs. and work will begin immediately. The new portion of the paving will begin about half a mile west of Dishman, to which point it is laid now, and extend to a point half a mile east of Vera. The contract calls for concrete pavement 20 ft. wide, 7½ ins.

thick in the middle and 5½ ins. deep on the shoulders. The contract provides that the work be completed by Oct. 15.

**Wapato, Wash.**—Contract for paving has been awarded to the \*Washington Paving Co., L. C. Smith Bldg., Seattle, on its bid of \$24,648, using bitulithic paving; also includes concrete sidewalks.

**Turtle Rock, Wis.**—Contract for building concrete road let to \*William Lathers, Beloit, 1,200 sq. yds. paving. F. M. Balsley, Madison.

**Washburn, Wis.**—\*C. T. Andrews, cement walks, 110 blocks. L. E. Clausen, City Clerk.

**Wauwatosa, Wis.**—\*White Construction Co., 30th and Pabst Ave., Milwaukee, Wis., paving Greenfield place. A. V. Brigham, City Clerk.

## SEWERAGE.

**Fresno, Cal.**—See "Streets and Roads." **Sacramento, Cal.**—City passed resolution for constructing sewers in Fourth St., between Fourth Ave. and Fifth Ave. J. C. Nurse, Supt. of Streets.

**Sacramento, Cal.**—City passed resolution for constructing sewer Larkin Way and the alley between 20th St. and Freeport Blvd. from Larkin Way to Burnett Way.

**Columbus, Ga.**—A special election will be held Sept. 13 to vote on issuing the following bonds: Sewer, \$150,000; hospital, \$15,000; fire station, \$12,000.

**Elgin, Ill.**—City will shortly receive bids installing sewerage system in River St., about \$50,000.

**Joliet, Ill.**—Board of Local Imprvts. referred to the city engr. for investigation the petition received for construction of a sewer with side connections on Summit St., between Bridge and Stone Sts.

**Evansville, Ind.**—Board of Pub. Wks. adopted resolutions to construct a local sewer in and along the alley between Rowley St. and Governor St. and Rowley St. and the Evansville and Princeton State Rd. from a point 50 ft. south of Louisiana St. and extending thence north 400 ft. Sewer shall be constructed of 400 ft. of 10-in. vit. sewer pipe and two manholes. Hearing on the impvt. July 6. Edward N. Frisse, Clk.

**Fortville, Ind.**—Town having plans prepared installing 1,200 ft. 15-in. storm sewers at 2,688 ft. curb and gutter.

**Sioux City, Ia.**—D. C. Shull and G. Y. Skells, representing the Great Western Land Company, ask City Council that a drainage culvert or sewer for carrying storm water from Military Rd. to Sioux River be installed. The proposed sewer will be about 1,200 ft. long; cost, about \$8,000.

**Jamaica, L. I.**—Local board adopted several petitions for construction of sewers in the Richmond Hill and Woodhaven sections, as follows: Hickory St. from Freedom Ave. to Oxford Ave., and in Oxford Ave., from Hickory St. to Maple St.; in Troy St., from Jamaica Ave. to Metropolitan Ave., and in Cottage St. from Jamaica Ave. to Metropolitan Ave.; in Syossett St., from Woodhaven Ave. to a point 90 ft. west of Bigelow Ave., and in Bigelow Ave., from Syossett St. to Jamaica; in North Villa St., from Jamaica Ave. to Metropolitan Ave., Hillside Ave., north side; Waverly place, North Curtis Ave., and in North Wickes St.; also for the construction of combined sewers in Idaho and Joslin Sts., and in Kendall place, Flushing.

**Biddeford, Me.**—Municipal officers discussed the Mile Brook sewer and a committee consisting of Aldermen Samuel L. Wilson and Rice E. Davis was appointed to investigate and report as to whether it is advisable to extend the sewer this year.

**Pontiac, Mich.**—City Comm. will hear objections July 9 on the construction of a lateral sewer in Harriet Ave. from Baldwin 414 ft. westerly; also on an assessment roll for a cement curb and gutter on Henderson St. from Washington to State and for a roll for a lateral sewer in Murphy St. from Huron to Liberty.

**Lake Crystal, Minn.**—Bonds of \$30,000 to install sewers were sold by the village.

**Riverton, Minn.**—Local school district No. 45 voted to issue \$115,000 bonds; \$100,000 will be spent in construction of the new high and grade school building; the balance on equipment and for sewer and water connections.

**Macon, Mo.**—Will issue bonds to abate a public nuisance with the present sewage system. This is a 6-ft. storm sewer with small laterals emptying at different points. Contractors installing purifying devices, one invited to make estimate of cost. This sewer draining about one square mile of surface. Work to be pushed as rapid as the proper steps can be taken. W. H. Martin, City Clerk.

**Sidney, Neb.**—City voted in favor of issuing \$5,000 sewer bonds. J. L. McIntosh, Mayor.

**Newark, N. J.**—Mayor Raymond executed on behalf of the city the supplemental contract between Newark and other municipalities and the Passaic Valley Sewerage Commission providing for an additional appropriation of \$2,250,000. The contract was presented by Joseph H. Quigg, secretary of the commission. The original contract for the sewer called for an appropriation of \$11,250,000. The money has been expended.

**Chateaugay, N. Y.**—The village has retained H. J. Langlois, City Engineer of Plattsburg, N. Y., as consulting engineer on the redesign of the village sewer system, which appears inadequate to meet the present requirements.

**Gloversville, N. Y.**—City Engineer H. J. Hammer will prepare plans and specifications for laying a sanitary sewage system in West Pine St., beginning on the west end of the present sewer and running west of Woodside Ave., 450 ft., to be constructed in 1917, with an 8-in. pipe and two laterals of vitrified sewer pipe. The council will hear all objections at a public hearing to be conducted July 17 at 8 p. m.

**New Rochelle, N. Y.**—Council ordered construction of a sewer in Overlook Rd., Wykagyl Park from Paine Ave. to Barbary Pl., cost, \$4,700.

**New York, N. Y.**—Plans prepared installing sewer and screening plans 91st st. and North River, by department sewers.

**Niagara Falls, N. Y.**—City Manager Carr was instructed by the City Council to advertise for bids for the construction of a sewer in 26th St. south of Walnut Ave.

**Syracuse, N. Y.**—Intercepting sewer board passed a resolution requesting the Mayor and Common Council to authorize an issue of \$100,000 in bonds for the use of board.

**Watertown, N. Y.**—Board of Pub. Wks. approved plans for the proposed sewer in Dewey St., west of Indiana Ave., fixing July 6 for a hearing.

**Watertown, N. Y.**—Board of Pub. Wks. rejected all bids received June 1 for the Water St. sewer extension, and the South St. curbing. New bids were asked.

**Akron, O.**—See "Streets and Roads." **Cleveland, O.**—City plans to install sewers in E. 18th and 158th Sts.

**Cleveland, O.**—City receiving bids for concrete outfall channel. Comr. Purchases & Supplies.

**Cleveland Heights, O.**—Village Clerk H. H. Canfield receiving bids July 16 for \$10,000 sewer bonds.

**Newark, O.**—Council plans sewers in portion Florence St.

**Carlisle, Pa.**—Ordinance was adopted extending the sewer on South College St. from Walnut for about 930 ft.

**Sayre, Pa.**—Borough Council referred the sewer on Keystone Ave. to the sewer committee to take up with a contractor and the borough engineer and the committee was given power to act upon the matter.

**Sayre, Pa.**—Borough Engineer Walker was instructed to prepare specifications and make estimates of the cost of the sewer on Keystone Ave. and the pavement of Elmer Ave., Mohawk St. and Spring St.

**Washington, Pa.**—Plans have been approved by the State Department of Health for constructing sanitary sewer system and sewerage pumping station, sewage to be delivered to Washington Borough sewage treatment works at Washington County Home, Chartiers Township.

**Providence, R. I.**—Resolution adding \$100,000 to the appropriation for sewers passed.

**Maryville, Tenn.**—Will vote July 7 on the question of issuing \$70,000 J. & J. sewer system bonds.

**Milwaukee, Wis.**—Comrs. of Public Works will July 2 recommend to the Common Council the construction of a sanitary and storm water pipe sewer in Vienna Ave., from Third St. to Ische Pl. and in Ische Pl. from Vienna Ave. to

Keefe Ave. Percy Braman, Deputy Commissioner of Pub. Wks.

**Sydney, N. S.**—Council plans storm sewer on James St. Acting City Engr., R. McKinnon.

**Blenheim, Ont.**—Engr. Morris, of Pembroke, is preparing a report on a drainage system for Harwich and Raleigh Twp.

**Sarnia, Ont.**—The Provincial Board of Health approved the sewers planned for the south end, which will cost in the neighborhood of \$21,000. City Engr., J. A. Baird.

**Sombra Twp., Ont.**—Twp. Council plans drainage work. Clerk, W. A. Scott, Wilkesport.

#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Berkeley, Cal.**—Council let \*Heafey & Tobin, 6-in. vit. ironstone pipe sewer from a point in the existing sewer in the center line of Dwight Way. S. C. Irving, Mayor. A. G. Briggs, City Clerk.

**Denver, Col.**—\*J. R. Gordon, 334 Century Bldg., at \$17,915, by city, installing sewers North Denver District No. 3.

**Ft. Dodge, Ia.**—\*C. A. Kling, 309 First Ave., sewer extension. W. L. Lang, City Clerk.

**Marshalltown, Ia.**—Council awarded \*Adolph Carlson Third Ward storm sewer system. Work is estimated to cost \$29,000 and contains 8,900 ft. of sewers.

**Sioux City, Ia.**—Council approved the bond and the contract of \*W. B. Carter for the erection of a storm sewer in Pearl St., from Seventh St. to Perry Creek.

**Sioux City, Ia.**—On motion of Councilman B. L. Taylor, head of the street department, the bid of \*Cady & Savonell for the erection of the West Morningside sewer was accepted by the council. The bid for the six miles of sewer is \$30,000.

**Boston, Mass.**—Board of Public Wks. awarded \*Frank Drinkwater for pipe sewers and drains in Parkland St., between Academy Hill Rd. and Winship St., and outlet in Academy Hill Rd., Brighton, at \$2,434.

**Boston, Mass.**—Board of Pub. Wks. awarded \*James J. Conway for sewerage works in Shelby St., between Saratoga and Lexington Sts., East Boston, at \$1,471.30.

**Milton, Mass.**—Town sewer commissioners let contract laying 2,536 ft. pipe sewer to \*D'Addario & Booth, 49 Edgewater Drive, Mattapan, \$11,586.

**New Bedford, Mass.**—City awarded contract for 5,600 sq. ft. of corrugated steel sheet piling for use in sewer work, to the \*Wemlinger Steel Piling Co., the only bidder, for 56 cts. per sq. ft.

**Luverne, Minn.**—For about 1 block, tile sewer contract awarded \*S. H. Edmunds at \$6,353.70. D. W. Campbell, City Rec., Luverne.

**Hebron, Neb.**—\*M. Vlasnick Lincoln, by city, installing sewers in three new districts.

**Cliffside Park, N. J.**—\*Bergen Contr. Co., \$15,665.20, lateral sewers, various streets. Engrs. McClave & McClave, Grantwood Fire Hall.

**Brooklyn, N. Y.**—See "Streets and Roads."

**Ft. Totten, N. Y.**—\*Roderich G. Morrison, Bayside, N. Y., at \$16,000, sewage plant. Owner, U. S. Government, Constructing Quartermaster.

**New York, N. Y.**—See "Streets and Roads."

**Niagara Falls, N. Y.**—City Council let to \*William Reach, sewer, Monroe Ave., extending from 27th to 30th Sts., about 940 ft., at \$2,495. Engineer's estimate, \$2,623.

**Yonkers, N. Y.**—Contracts for the construction of three sections of sewer in the new street extending School St. to Elm St. and Palisade Ave., to \*Frederick Braham, he being the lowest bidder in each case. The various proposals are as follows: Sewer in School St., between John St. and Elm St., \$931.90; sewer in School St., from Nepperhan Ave. northerly 110 feet, \$1,197; sewer in John St., from end of the present sewer to School St., and in School St., from John St. southerly 229 feet, \$1,175.10.

**Columbus, O.**—\*Geo. Geiseler & Son, 376 S. Pearl St., at \$285, and to \*W. D. Sullivan, 455 E. Rich St., at \$571, sewers, Fulton St. and alley north of Sullivan Ave. Engr., Henry Maetse, City Hall.

**East View, O.**—Village Council let to \*George Bros., 1448 Bolivar road, Cleve-

land, for storm and sanitary sewers. Chas. F. Vek, Clerk, Warrensville, O.

**Lorain, O.**—\*Chas. Nicolo, W. Erie Ave., sewer curb connections, \$1,500, 7th and 11th Sts. L. P. Johnston, City Clerk.

**Youngstown, O.**—For installing sewers portion Hillman and other streets, city let \*Jobin & Miller, 135 West Glenaven Ave., at \$24,125, and Miller Bros., 46 Dewey Ave., \$19,188.

**Oklahoma City, Okla.**—\*Burkham Construction Co., St. Louis, Mo., at \$183,343.80, sewer. C. T. Lemmelbeck, City Clerk.

**Dormont, Pa.**—See "Streets & Roads." **Edwardsville, Pa.**—\*Jos. Banks Construction Co., Bennett Bldg., Wilkes-Barre, Pa., at \$2,877, storm sewer, 10 and 15-in. t. c. pipe sewer. Richard Lloyd Jr., Boro. Pres.

**Harrisburg, Pa.**—\*Henry Opperman, by Dept. of Sts. & Public Imprvts., for sewers in Lenox and 40th Sts. M. B. Cowden, City Engr., Calder Bldg.

**Hazleton, Pa.**—\*L. Carelli, sewer, Diamond and Arthur Ave.; T. C. pipe sewer, 150 ft. 12 in., 464 ft. 10 in., 2,558 ft. 8 in.; 8 manholes, 9 lampholes. W. B. Gerlach, Supt. of Sts. & Pub. Imprvts. Stephen Hughes, Clerk, City Hall.

**North Braddock, Pa.**—\*Manella Construction Co., Union Bank Bldg., Pittsburgh, Pa., sewer, Franklin Ave. Engr., Geo. F. Siefers, Spring and Jones Aves.

**Fond du Lac, Wis.**—\*R. Bennett and August Krueger, sanitary and storm sewers, board of public works.

**Kimberly, Wis.**—\*Farnam & Yaur, Antigo, Wis., sanitary and storm sewer. Steve Stilp, Village Clerk, care Kimberly Clark Paper Co., Kimberly.

**Waukesha, Wis.**—\*P. Cayll, at \$1,449.52, sanitary sewer, Greenfield & Frane Sts. T. C. Martin, City Clerk.

**Sandwich, Ont.**—\*Merio, Merlo & Ray, 296 Windermere road, Walkerville, by Town Council, for sewer and water mains.

**Sandwich South Twp., Ont.**—Contract awarded \*C. Bedham, care of Town Clk. John McAuliffe, Maidstone, for drainage work by Township Council.

#### WATER SUPPLY.

**Maroo, Ill.**—Council plans to erect a new water works building.

**Exira, Ia.**—Town voted in favor of issuing \$5,000 water works bonds. Geo. N. Cool, Town Clerk.

**Junction City, Kan.**—City plans to build reservoir 1,000,000-gal. capacity.

**Calais, Me.**—Application was made by the Maine Water Co. for a location for a pipe line from the company's pumping station at Milltown to Howard Lake, the pipe to be of stave construction 12 and 14 ins. in diameter, the work to be done under the supervision of an official designated by the Council. Hearing was set for July 9.

**Fitchburg, Mass.**—Park Comm. will ask Council for \$500 to pipe water to the Cogshall Memorial Fountain in Cogshall Park.

**Waltham, Mass.**—Mayor signed the order for \$7,000 to be used for experimental work in the movement now being investigated by the Water Supply Comm., to increase the supply.

**Riverton, Minn.**—See "Sewerage." **Geraldine, Mont.**—Council is considering the purchase of the city water wks. and enlarge it to meet the requirements of the town.

**Sidney, Mont.**—Voted a \$10,000 bond issue for water works.

**Mitchell, Neb.**—Voted in favor of issuing \$12,000 water extension bonds.

**Sidney, Neb.**—City voted in favor of issuing \$5,000 water bonds. J. L. McIntosh, Mayor.

**Pitman, N. J.**—There were no bids received June 11 for the \$48,000 water bonds. J. E. Peterson, Borough Clk.

**Rahway, N. J.**—Board of water commissioners will engage a chemist to supervise the water supply.

**Red Bank, N. J.**—City decided to advertise for bids for the drilling of a new well.

**Woodstown, N. J.**—Borough has engaged an engineer to make a survey of the water works system and make recommendations to increase supply.

**Ravena, N. Y.**—Taxpayers voted to purchase local water system at a cost of \$110,000.

**Asheville, N. C.**—City Comrs. petitioned for installation of a 2-in. water

line connecting with the main line at Michigan Ave. in West Asheville, and running 400 ft. towards Hill St.

**Greenville, N. C.**—The sale of the water and light improvement bonds of \$100,000 has been postponed until July 5. James C. Tyson, Town Clk.

**La Grange, N. C.**—City soon receives bids installing waterworks.

**Eaton, O.**—Ordinance introduced calling for bond issue of \$5,000 for water works improvements.

**Euclid, O.**—Council authorized a \$7,000 bond issue for water work system.

**Hamilton, O.**—Council instructed the service director to extend the water main on Bender Ave., between Kahn and Shuler Aves.

**Hamilton, O.**—Council ordered extension of gas and water mains on Weller and Minor Aves.

**Hubbard, O.**—Village Clerk J. W. Powers receiving bids July 16 for \$12,000 water works coupon bonds.

**Leipsic, O.**—Village Clerk C. J. Ericson receiving bids July 2 for \$2,400 water works refunding bonds.

**Maple Heights, O.** (Worthington P. O.)—Taxpayers voted a \$50,000 bond issue to install water works.

**Montpelier, O.**—Water works extensions contemplated. Several hundred feet 3-in. c. l. pipe 40 house connections, 1 gate valve, 100 meters, 1 set shaking grates. A. G. McKalip, Supt.

**Rocky River, O.**—Town will sell, July 3, \$17,130 bonds to install water mains in Columbia, Lakeview and Bates Sts. F. Mitchell, Clk.

**Trenton, O.**—City plans pumping station and waterworks, about \$375,000.

**Enid, Okla.**—The city's five National Banks will each purchase \$10,000 worth of the \$50,000 bonds issued for the improvement of the water works.

**Red Fork, Okla.**—City considering construction of water works system cost \$20,000. W. E. Kerr, City Clk.

**Pendleton, Ore.**—City plans to spend \$2,000 for a new water supply intake.

**Germanstown, Pa.**—Bill in Council to lay water pipe in Conlyn St., from Woodstock to 21st St.

**Knoxville, Tenn.**—Residents of East Knoxville have organized to procure water main extensions.

**Port Arthur, Tex.**—City Engr. H. M. Maire will be in the market shortly for meters, corporation and curb cocks.

**Ste. Genevieve de Batiscan, Que.**—Municipal council considering graveling of roads at a cost of \$30,000. Clerk and Secretary, Tancrede Frudel.

**Shawano, Wis.**—City to improve water and light plant and will install 230-h.p. Corliss engine.

**Superior, Wis.**—A 12-in. main on 28th St. will be laid, at a cost of \$20,000.

**Chatham, Ont.**—The Board of Water Comrs. plan to lay a water main to run west from King St. City Engr. J. W. Adams.

**North Carolina.**—Water supply improvements at Monroe and Wadesboro recommended by the state board of health.

**Steeltown, Ont.**—Town council considering sinking two pipes of 14 or 16-in. diameter to the wells for their water supply. Town clerk, Joseph Robinson.

#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Savannah, Ga.**—Water Committee of Council and the Board of Purchase opened bids on 685 water meters and will be tabulated. The names of the bidders are: National Meter Co., Neptune Meter Co., Hersey Meter Co., Pittsburg Meter Co., Thompson Meter Co., and the Worthington Pump & Machine Co. In addition, bids were opened on 500 water meter boxes: John Rourke & Son, J. J. McDonough of Savannah, and Griffin Machine Co., of Griffin, Ga. Award will be made later.

**Gladbrook, Ia.**—Contract let to \*Des Moines Bridge & Iron Works, 9th and Tuttle, Des Moines, for tower and tank; \$4,100.

**International Falls, Minn.**—\*Cobey & Hall at \$2,160.50, water mains 5th St., 5th Ave. and 8th Ave. F. E. Patterson, City Clk.

**Drake, N. D.**—\*Badger Constr. Co., Fargo, N. D., water works. Engr. T. R. Arnold, Leland Hotel, Minot, N. D.

**Newport, R. I.**—\*Simson Bros. Corp., 166 Devonshire St., Boston, \$32,589, by city, reservoir, 6-in. supply pipe and 10-in. discharge pipe.

**Nashville, Tenn.**—\*Frensey Brass &



Foundry Co., for furnishing 750 valve castings for Allis-Chalmers pump.

**St. Lambert, P. Q.**—Contract has been awarded to \*Laurie & Lamb, Montreal, for centrifugal pump of 1,100 M. I. G. daily capacity against 100 lbs. pressure.

MISCELLANEOUS.

**Anniston, Ala.**—The question of purchasing a crematory for the city is again being considered by a committee appointed by President John F. Williams.

**Berkeley, Cal.**—In conjunction with the plans of the City Council to lessen the expense of operating the incinerator, City Engineer J. J. Jessup has been authorized to prepare proposals for bids for the collection and disposal of garbage. The action is the result of a plan of the Mayor to cut the expenses at the incinerator, which at present cost the city about \$9,000 annually to operate. By the plan it is expected that a saving will be made to the citizens of Berkeley as well as the city. It is planned to permit purchasers of the garbage to collect direct from the residents without charge. In the disposal the city plans to sell the tin cans and other waste metal accumulated at the incinerator.

**Pensacola, Fla.**—Street Comnr. Johnson reported to the board that at his request the City Engr. is preparing estimates on the probable cost of certain repairs to be effected at once on the Cypress St. wharf, which is city property.

**Alma, Ga.**—See "Streets and Roads."

**Columbus, Ga.**—See "Sewerage."

**Joliet, Ill.**—Comnr. Sorg recommended to the Council the purchase of the Austin Western street sweeper, which has been tested in the city and has reduced the cost of keeping the streets clean by fully one-half.

**Rock Island, Ill.**—Leases were signed by the Milwaukee, the Burlington and

the Davenport, Rock Island and North-western lines with the levee comm. in Davenport for improvements on the levee to cost \$600,000, to be completed June 30, 1921. The improvements include a \$50,000 union passenger station on the levee, a freight depot, an overhead crossing at Scott St. and a subway near the Davenport end of the Government bridge.

**Springfield, Ill.**—City Clerk instructed to advertise for bids for one-ton auto truck for garbage dept.

**Columbia, Ind.**—City Council accepted the bid of J. J. Wild & Co. of Indianapolis for the purchase of the \$24,000 bonds issued for the erection of the new City Hall.

**Portland, Ind.**—The \$100,000 issue Jay County Court House bonds was sold to J. F. Wild & Co., Indianapolis, for \$500 premium. Bonds bear 4½ per cent interest and cover period of 10 yrs.

**Kansas City, Kan.**—City plans incinerating plant foot of Broadway, capacity 100,000 tons, about \$100,000. C. Hill, city engr.

**Lansing, Mich.**—City defeated the proposition to issue \$75,000 Park bonds. J. A. Parsons, City Clk.

**Fairmont, Minn.**—Martin County Aud. H. C. Nolte receiving bids June 29 \$100,000 drainage bonds.

**Chatham, N. J.**—Borough Clerk Wm. S. Angell will receive bids June 29, \$45,000 refunding coupon registered bonds.

**Yonkers, N. Y.**—The secretary was authorized to advertise for bids for the erection of the municipal stables in Alexander St., the proposals to be received at the next meeting.

**Greensboro, N. C.**—Guilford County will soon place on the market \$250,000 Court House bonds. W. C. Boren, chmn. Bd. County Comrs.

**Lumberton, N. C.**—City Clk. and Treasurer Ira B. Townsend receiving bids July 10, \$51,000 refunding coupon bonds.

**Canton, O.**—Council approved purchase of three more motorcycles for the Police Dept.

**Cleveland, O.**—Development of a park system, the scope of which is to embrace

practically all of Cuyahoga County, is to be the object of an application to be made within a few days before Probate Judge Hadden by trustees of Euclid Twp., it was announced by County Engineer Stinchcomb. Total of \$75,000 on hand for inauguration of improvement.

**East Palestine, O.**—Village Clerk O. L. Butts receiving bids July 9, \$6,400 refunding coupon bonds.

**Okemah, Okla.**—Voted in favor of issuing \$10,000 Park and Fair Ground bonds.

**Port of Astoria, Ore.** (Astoria P. O.).—Assistant Secretary Jos. F. Marias receiving bids July 2, improvement bonds to the amount of \$500,000.

**Harrisburg, Pa.**—Louis Tribus, of the engineering firm of Tribus & Massa, of New York City, to make the ash and garbage survey for this city.

**Manson, Wash.**—Manson Irr. Dist. voted in favor of issuing \$300,000 irrigation bonds.

BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded).

**Boston, Mass.**—Board of Public Works awarded June 12 \*M. S. Kelliher for making repairs on building and piers at North End Park at \$4,968. Bids opened June 8.

**Long Prairie, Minn.**—Todd County, Contract for constructing County Ditch No. 40 let to \*S. H. Adams, \$14,700. E. M. Berg, Co. Aud.

**Hamilton, O.**—City board of control let \*J. S. Tobit, of Cincinnati, to furnish about 50,000 gallons of oil for city streets.

**Wilkes-Barre, Pa.**—A contract for the furnishing of 50 single disc traffic and 16 double disc traffic signs was awarded to the \*Good Roads Machine Co. of Philadelphia.

**Enumclaw, Wash.**—The contract for the construction of a drainage system in Drainage Dist. No. 6 has been awarded by the comrs. to \*D. A. Foley & Co., of Aitken, Minn., for approximately \$35,000.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Mass., Boston	.....	noon, July	2..Paving with sheet asphalt, Topeka or bitulithic.....	Edw. F. Murphy, Comr. P. W.
Cal., Los Angeles	.....	2 p.m., July	2..Constructing concrete pavements with expansion joints and bit. wearing surface, including grading, reinforced concrete and corrugated metal pipe culverts.....	H. J. Lelande, Co. Clerk.
Ind., Lafayette	.....	10 a.m., July	3..Constructing brick road.....	G. W. Baxter, Tippecanoe, Co. Audr.
Ind., Goshen	.....	10 a.m., July	3..Constructing gravel road.....	A. R. Bemenderfer, Elkhart, Co. Audr.
Mass., Boston	.....	noon, July	3..Paving with sheet asphalt, Topeka or bitulithic.....	Edw. F. Murphy, Comr. P. W.
Wash., Pullman	.....	5 p.m., July	3..7,065 yds. macadam and 865 yds. rock pavement.....	F. F. Gannon, City Clerk.
Mass., Boston	.....	noon, July	3..Surfacing 18,400 ft. of road; also building a section.....	State Hwy. Commission.
Cal., Sacramento	.....	11 a.m., July	3..Asphaltic concrete pavement on 4-inch concrete foundation, also curbing and guttering and sidewalks.....	M. J. Desmond, City Clerk.
Miss., Meridian	.....	10 a.m., July	3..88,000 sq. yds. bit. wearing surface.....	J. T. Pinkston, Engr., Court House.
Ia., Dubuque	.....	8 p.m., July	5..Paving with creosoted wood block, brick, sheet asphalt or bitulithic on concrete or old macadam foundation; also cement curb and gutter.....	J. J. Shea, City Recorder.
N. Y., New York	.....	2 p.m., July	9..Regulating, widening and repaving with wood block on concrete foundation .....	M. M. Marks, Boro. Pres., Manhattan.
SEWERAGE.				
Ill., Chicago	.....	11 a.m., July	2..Tile pipe sewer construction, manholes and catch basins.....	M. J. Faherty, Pres., Board of Local Impvts.
Ia., Dubuque	.....	8 p.m., July	5..8-inch tile pipe sanitary sewer.....	J. J. Shea, City Recorder.
Ind., Peru	.....	July	7..Drainage ditch construction.....	C. E. Rose, Miami Co. Construction Comr.
Ind., Fowler	.....	1 p.m., July	10..Constructing main drain and two laterals.....	G. W. Bates, Supt. Construction, Benton Co.
Okla., Ada	.....	July	10..Sanitary sewer construction.....	W. Conger, City Clerk.
WATER SUPPLY.				
Miss., Clinton	.....	July	1..Drilling deep well .....	R. R. Hardy, Town Clerk.
Wash., Pullman	.....	July	3..4-inch and 6-inch c. i. pipe, specials, etc. ....	M. F. Gannon, City Clerk.
BRIDGES.				
Ind., Rensselaer	.....	2 p.m., July	3..Constructing 3 steel bridges and repair and removal of several others .....	J. P. Hammond, Jasper Co. Audr.

## STREETS AND ROADS.

**Hot Springs, Ark.**—C. C. Burkett of the State Highway Commission and assistants finished the survey of the Arkadelphia-Hot Springs highway, 35 miles in length. The proposal is to build this road with a stone base, gravel top and oil finish. Engineer will begin survey of the section of the road south from Arkadelphia, which will run to Alexandria, Iowa.

**Tucson, Ariz.**—City Council passed resolutions providing for the widening of West Congress St., the paving of the alley off Congress between Fifth and Sixth Aves., and the building of a concrete culvert in Sixth Ave. at Seventh St.

**Brownstown, Ind.**—Jackson county highway bonds, \$2,400, 4½ per cent., ten-year, were sold to O. E. Leudtke, of Brownstown, Ind., for \$1.00 premium and accrued interest.

**Cannelton, Ind.**—Perry county highway bonds, \$9,350, 4½ per cent., ten-year, were sold to J. F. Wild & Co., Indianapolis, for \$4 premium and accrued interest.

**New Albany, Ind.**—Wyandotte Cave, in Crawford county, Ind., 31 miles west of New Albany, is to be connected with a pike, making the place accessible from Louisville, New Albany and Jeffersonville. The Harrison County Commissioners recently awarded the contract for construction of a road from the terminal of a pike extending west from Corydon to the cave. Wyandotte Cave was discovered in 1852.

**Kennelsaer, Ind.**—Five issues Jasper county highway bonds, in amounts of \$9,200, \$10,400, \$11,600, \$7,800 and \$6,400, were sold to J. F. Wild & Co., Indianapolis, for total premium of \$17.95.

**Wichita, Kan.**—Board of Commissioners adopted resolution to curb, gutter and pave Central Ave., from the east side of Santa Fe Ave. to the west side of Mead Ave. L. W. Clapp, Mayor.

**Wichita, Kan.**—Resolution adopted to repave the intersection of Meridian Ave. and Douglas Ave. with brick block pavement on concrete base.

**Wichita, Kan.**—Ordinance approved for cleaning and oiling Kellogg St., Volutsia Ave., and Osage Ave. H. D. Lester, City Clerk.

**Wichita, Kan.**—Ordinance approved for cleaning and oiling Woodrow Ave. from the south line of Briggs Ave. to the south line of Franklin Ave., and of Green St., from the south line of Douglas Ave. to the north line of Kellogg St. L. W. Clapp, Mayor.

**Hagerstown, Md.**—Council granted petition for park pavement on east side of Virginia Ave., between Howard St. and Reynolds Ave.

**Butte, Mont.**—City Council passed ordinance for the paving of Broadway between Montana and Arizona Sts.; estimated cost, \$11,593, and Granite St., from Main St. to Montana St., \$20,694. July 11 is the date set for hearing.

**Elmira, N. Y.**—Board of Pub. Works will ask for bids for paving on West Gray St. and Lake St.

**Fairport, N. Y.**—Messrs. H. A. Kahler & Co., of New York, purchased the \$21,000 pavement bonds.

**Asheville, N. C.**—Board of County Commissioners with W. S. Falls and R. P. Coble of the State Highway Commission passed a resolution endorsing the construction of a highway connecting Asheville and Knoxville.

**Mt. Vernon, O.**—The Knox County Savings Bank of Mt. Vernon purchased the street improvement bonds aggregating \$2,090.29. Howard C. Gates, City Auditor.

**Youngstown, O.**—City Auditor J. R. Edwards receiving bids July 9 for the following bonds: Hospital land, \$8,000; improvement (city's portion), \$15,000; Central police station imp., \$7,000; sub-police station, \$23,000; improvement (city's portion), \$32,000; Pine Hollow fire station \$1,000; public comfort station, \$7,000; Fairgreen Ave. paving, \$12,590; Audubon St. paving, \$2,690; Center St. paving, \$2,080; Erie St. paving, \$3,555; Green St. paving, \$3,485; Indianola Ave. sewer, \$3,945; Lucius Ave. sewer, \$9,770; Indianola Ave. sewer, \$6,295; Smithfield St. sewer, \$3,510; Osborne Ave. sewer, \$3,700; Hylda and Jane Sts. sewer, \$3,185; Manhattan Ave. sewer, \$5,025; Hylda St. sewer, \$2,455; Dunlap Ave. sewer, \$3,225; Carlyle St. sewer, \$4,485; Butler Ave. sewer, \$1,505; Hunter St., grading and sewer, \$2,810; Indianola et al. streets, sidewalk, \$16,925; Central Ave. et al. streets, sidewalks, \$3,025.

**Bristow, Okla.**—City Council will receive bids July 2 for paving street improvement District No. 1 as per plans of Benham Engineering Co., consulting engineers, Oklahoma City, Okla. Other districts are being formed and much paving work will be done this year.

**Clinton, Okla.**—Board of Commissioners have passed resolutions for the paving of two additional paving districts using street asphalt, about \$100,000. Benham Engineering Co., of Oklahoma City, consulting engineers.

**Marlow, Okla.**—City will receive bids soon for paving the business section. Petitioners are being signed up. Benham Engineering Co., consulting engineers; estimated amount of work, \$60,000.

**Thurston, Ore.**—Thurston and Jasper and other communities nearby are endeavoring to raise \$600 to help improve the road from the McKenzie highway by the Mt. Vernon cemetery to the Natron road.

**Kittanning, Pa.**—Bids for the proposed new state highway between Ford City and Kittanning will be published within a very few days.

## BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded)

**Tucson, Ariz.**—Common Council let \*J. M. Pacheco Contracting Co., of Tucson at \$850, grading the alley between South Fifth Ave. and South Sixth Ave., through block 256, from the south line of East 11th or Broadway St. to the north line of East 12th St. L. O. Cowan, City Clk.

**Tucson, Ariz.**—Common Council let to \*Warren Bros. Co., of Boston, Mass., improving portions of North Sixth Ave., East 10th St., East Pennington St. and the alley along the north side of the Manning subdivision of lots 13 and 14 of block 195; concrete curb, walk and gutter; 8,500 sq. yds. 2-in. bitulithic on a 5-in. base, \$2.233 per sq. yd.; 12,757 sq. yds. 2-in. bitulithic on a 4-in. base, \$2.116 per sq. yd.; 6,262 lin. ft. of concrete curb, \$0.56 per lin. ft.; 7,772 lin. ft. of concrete gutter, \$0.57 per lin. ft.; 9,812 sq. ft. of concrete sidewalk \$0.16 per sq. ft.; 540 sq. ft. of concrete sidewalk removed, \$0.08 per sq. ft.; 1 corrugated iron culvert, 48x12x3.5 in., \$5 each; miscellaneous work provided for in contract, \$900. And all other proposals were declared rejected. L. O. Cowan, City Clerk.

**Los Angeles, Cal.**—Board of Pub. Wks. awarded \*Geo. R. Curtis, constructing of asphalt pavement, granite brick gutters, concrete gutters, etc., St. Andrews place from Temple St. to Third St., and portions of First St., Second St. and Third St., 9-10 cts. per sq. ft. for grad- ing to subgrade, 14 cts. per sq. ft. for asphalt paving, 16 cts. per sq. ft. for concrete gutters, 39 cts. per sq. ft. for granite block gutters. Horace B. Ferris, Secretary.

**Champaign, Ill.**—Board of local improvements awarded the contract for the construction of the local improvement of Elm St. and First St. and Water St. to \*Stipes & Pilcher of Champaign. S. C. Tucker, Pres.; Fred C. Lohmann, Secy.; James T. Boland, Supt. of Sts.

**Elmira, N. Y.**—\*Warren Bros. of Boston, have contracts for West Washington Ave. from the Erie Railroad bridge to Walnut St., and for South Walnut St. from Hudson St. to South Broadway. These pavements will be bitulithic asphalt.

**Elmira, N. Y.**—\*E. W. Walsh to build a brick pavement on Carroll St., between Lake and Baldwin Sts., to replace the present cobblestone pave.

**Portland, Ore.**—City Council opened bids for paving and sewer Denver Ave., from Killingsworth to Portland Blvd.; Hahn & Rebman, \$5,429.58; S. Simonsen, \$5,508.10; John Keating, \$6,104.99; 72d St. S. E. from 61st Ave. S. E. to Foster road; Oregon Hassam Paving Co., "A" Hassam in track, \$1.70 sq. yd.; "B" Hassam in roadway, \$1.60 sq. yd., \$35,865.75; portions of Hill Crest drive and lane, no bids received. Sewer in Knapp Ave. from E. 14th St. to Milwaukee St.; John Keating, cement pipe, \$1,324.13; Azar & Co., cement pipe, \$1,393.39; Elliott Contr. Co., cement pipe, \$1,498.75.

## SEWERAGE.

**Decatur, Ill.**—Gov. F. O. Lowden has approved Senate bill No. 299, "to create sanitary districts and to provide for sewage disposal," and the measure introduced in the Senate by Senator W. G. McCullough now is a law.

**Wichita, Kan.**—Resolution adopted to construct sub-district 7 of district A of sanitary sewer No. 12 in the city, according to plans and specifications on file at the office of city engineer.

**Winston-Salem, N. C.**—City to consider sale of sewerage, water and school improvement bonds recently voted.

**Youngstown, O.**—See "Streets and Roads."

**Ada, Okla.**—See "Water Supply."

**Mangum, Okla.**—Petitions are being circulated for paving in districts recently protested out. Benham Engineering Co., Oklahoma City, engineers, \$75,000.

**Okmulgee, Okla.**—Board of Commissioners will call an election soon to vote \$535,000 bonds for improvements to the water and sanitary sewer systems. Benham Engineering Co., consulting engineers, Oklahoma City, were retained by the city on this work, divided as follows: Water works extensions, consisting of complete water purification plant, raising present dam for additional storage, river protection work, 16-in. force main to city, larger water lines, closing dead ends and providing water mains for new additions to the city, remodeling pumping station, amount of \$390,000. Sewer extensions, consisting of large intercepting sewers, extending main sewers and complete new sewage disposal plant, consisting of Imhoff tanks and sprinkling filter, \$145,000. The report of the Benham Engineering Co. was accepted by the Board of Commissioners and ordered placed on file.

**Sand Springs, Okla.**—City Council passed resolutions for street improvement District No. 2, asphalt concrete, also establishing sanitary sewer District No. 5, amount of work, \$90,000. Benham Engineering Co., Oklahoma City, Consulting Engineers.

**Astoria, Ore.**—The council has declared its intention to construct a sewerage and drainage district to be known as "Sewerage and Drainage District No. 3," also a sewer and drain on 7th St. from R-W of S. P. & S. to Bond St. to consist of 18-inch concrete pipe.

**Seattle, Wash.**—Plans are being prepared by City Engineer A. H. Dimock, for the construction of a sewerage purification plant and a complete sewerage system of \$1,025,000. The estimates for the main and trunk lines are placed at \$400,000 and the laterals at \$625,000.

## BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Beverly, Mass.**—Bids were received by the committee on public service and aid for the Fairview Ave. sewer, as follows: James L. Grady, \$5,000 including materials with the exception of pipe, brick, cement and iron castings. Alternate bid including all materials \$5,763. James J. Welch & Co., \$5,229; alternate bid, \$6,147. Edmund Cahill, \$5,350; alternate bid \$6,150. The bids were taken under advisement.

**Omaha, Neb.**—City council approved contract and bond in favor of the Nebraska Construction company for construction of a storm sewer from Thirty-seventh and Srague Sts. to Forty-fifth and Ohio Sts., \$57,000.

**Portland, Ore.**—See "Streets and Roads."

## WATER SUPPLY.

**Sunnyvale, Cal.**—Town trustees rejected bids for the acquisition and installation of a modern pumping system in connection with the municipal water plant, decided to purchase the material in the open market.

**Atlanta, Ga.**—City will ask Council to appropriate \$197,500 to construct the water main from the Hemphill pumping station to the Silver Lake cantonment site. According to Superintendent Smith, who has made an estimate of the cost of the work, the material will cost \$119,000, labor \$62,000 and incidentals will amount to \$16,500. The main will be laid for a distance of practically 50,000 feet, and will be sixteen inches in diameter. One thousand five hundred feet from the camp, additional pumps will be installed so as to supply the needed pressure at the camp. Mayor Candler.

**Altoona, Kan.**—Citizens voted \$25,000 bond issue for water works improvements.

**Lameli, Mont.**—Water bonds to the amount of \$4,000 purchased by the Merchants' Loan Co. of Billings. H. B. Shields, City Clk.



# OFFICIAL ADVERTISING

**"Reaches Most Bidders at the Least Cost"**

Rate \$2 an inch. Copy reaching us by 10 a. m.  
Thursday will go in issue mailed that night.

## CITY MANAGER WANTED

Goldsboro, North Carolina, invites applications for the position of City Manager. Goldsboro is a progressive city of over 11,000 inhabitants, with healthful climate and good trade conditions—located on three railroads in the heart of the most fertile section of eastern North Carolina.

Applicant must have pleasing personality, good business judgment and broad vision. One possessing qualifications of Sanitary Engineer preferred, though this is not absolutely essential.

Excellent opportunity for energetic man of ability to produce results.

Salary will probably range from \$200.00 to \$250.00 per month. Applications will be received up to July 1, 1917. Information and data furnished upon request.

CITY MANAGER COMMITTEE,  
P. O. Box 461, Goldsboro, N. C.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., June 21, 1917.—Sealed Proposals will be opened in this office at 3 P. M., July 31, 1917, for the construction complete of the United States Post Office and Court House at Chadron, Neb. Drawings and specifications may be obtained from the Custodian of Site at Chadron, Neb., or at this office, in the discretion of the Acting Supervising Architect, JAS. A. WETMORE, Acting Supervising Architect.

## Notice to Engineers

Sealed proposals addressed to the Finance Committee of the Borough of Madison, N. J., will be received up to 8 o'clock p. m., July 16, 1917, when they will be publicly opened and read, for the preparing of a tax map in accordance with the specifications of the State Board of Taxes and Assessments and the specifications of the Borough of Madison, N. J., which may be obtained upon application to the Borough Clerk. The right to reject any or all bids is hereby expressly reserved.

A certified check payable to the Borough of Madison, in the sum of ten per cent. of the amount of the cost of the work, must accompany the estimate of each bidder, as a guarantee that he will, if successful, enter into a written contract and furnish a satisfactory surety bond.

WILLIS A. PARKER, Chairman.

15,000 Feet

## 24" Cast-Iron Pipe

Weights 183 lbs. to the foot

Used but in first-class condition  
Immediate Shipment

**ZELNICKER IN ST. LOUIS**

**PROPOSAL ADS in  
Municipal Journal  
Bring Results**

## HIGHWAY WORK

OFFICE OF THE STATE COMMISSION  
OF HIGHWAYS

Albany, N. Y.

Sealed Proposals will be received by the undersigned at their office, No. 55 Lancaster Street, Albany, N. Y., at one o'clock P. M. on Monday, the 9th day of July, 1917, for the repair of highways in the following counties:

ALBANY (two contracts—resurfacing and reconstruction).

BROOME (two contracts—resurfacing).

CATTARAUGUS (one contract—resurfacing).

CHAUTAUQUA (one contract—reconstruction).

COLUMBIA (one contract—reconstruction).

ERIE (one contract—resurfacing).

ESSEX (one contract—resurfacing).

GREENE (one contract—surface treatment).

HERKIMER (one contract—surface treatment).

JEFFERSON (one contract—resurfacing).

LIVINGSTON (two contracts—resurfacing).

MONROE (one contract—resurfacing).

ONEIDA (two contracts—resurfacing and surface treatment).

ONTARIO (one contract—resurfacing).

ORANGE (one contract—reconstruction).

OSWEGO (two contracts—surface treatment).

OTSEGO (one contract—reconstruction).

SARATOGA (one contract—resurfacing).

SENECA (one contract—resurfacing).

STEBEN (one contract—resurfacing).

WASHINGTON (one contract—surface treatment).

Also broken stone contract No. 74, Erie County, on Road 1038, for No. 1 stone, 450 tons; No. 2 stone, 375 tons; No. 3 stone, 3,200 tons.

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the office of the Division Engineers in whose division the roads are to be improved. The addresses of the Division Engineer and the counties in which they are in charge will be furnished on request.

The especial attention of bidders is called to "GENERAL INFORMATION FOR BIDDERS" on the itemized proposal, specifications and contract agreement.

EDWIN DUFFEY,

I. J. MORRIS, Commissioner.

Secretary.

(25-26-27)

## ELECTRIC TRACTION SHOVEL

Little Giant, 1½-yd. dipper, 3-phase, 60-cycle, 440 volts A. C.  
Used only a few days; practically as good as new. A bargain.

**ZELNICKER IN ST. LOUIS**

## FOR SALE

Ten Ton, Three Wheel Roller,  
Cheap, McCormick & Son, c/o Municipal Journal.

## Compressors

- 1 Ingersoll-Rand, Imperial Type X-B-2, cap. 2,400', belt-driven.
- 1 11x12 Laidlaw-Dunn-Gordon belt-driven machine.
- 1 Sullivan 2-stage, steam-driven, cap. 550'.

## Drag-Lines

- 1 No. 3 Monaghan, 65' boom, 2½-yard bucket.
- 1 Page drag-line, 50' boom, 1-yard bucket.

## Hoisting Engines

- 2 3-drum 8¼x10, with or without boilers.
- 2 7x10 D. C. D. D. hoists.
- 1 6¼x18 D. C. D. D. hoist with boiler.

## Cranes

- 1 15-ton 4-wheel McMyler, 44' boom, 1½-yard clam-shell bucket.
- 1 15-ton 4-wheel Browning, 40' boom, 1½-yard bucket.

## Crushers

- 1 No. 3 Austin.
- 1 No. 3 Gates.
- 1 No. 4 Austin.
- 1 No. 5 McCully.
- 1 No. 5 Austin.
- 1 No. 6 Gates Style "K" complete plant.

## Cars

- 30 4-yard Western 36" gauge cars.
- 35 1½-yard Western 24" gauge cars.

## Steam Shovels

- 1 No. 1 Thew Traction Shovel, 1½-yard, first-class.
- 1 No. 0 Thew Shovel, first-class.

## Koppel Track

- 5 Miles 24" track, good as new.
- 1 13-ton Shay gravel locomotive.

## Dump Trucks

- 3 White 5-yard dump trucks.
- 2 White 6-yard dump trucks.

## Tractors

- 1 Holt Caterpillar, good as new.
  - 1 International Mogul, good as new.
- And others.

**George C. Marsh & Co.**

791 Old Colony Bldg., Chicago, Illinois

## WANTED

Macadam and Tandem Roller—  
Must be in good condition. Address Box 795, c/o Municipal Journal.

## Rails

30 miles, 60 lb. A. S. C. E. Section with continuous bars. Almost new.

## Steel Piling

Prompt shipment from stock.

- |     |      |                      |             |
|-----|------|----------------------|-------------|
| 600 | pcs. | 12-ft. Wemlinger     | 12"x7½ lbs. |
| 345 | "    | 16-ft. Lackawanna    | 7"x¾"       |
| 363 | "    | 20-ft. United States | 12½"x¾"     |
| 585 | "    | 20-ft. United States | 12"x¾"      |
| 125 | "    | 35-ft. Lackawanna    | 14"x¾"      |

All in first-class driving condition.  
Large stock of other sizes.

## Concrete Mixer

- 1 13B Koehring with Roller, Engine and Loading Hopper. First-class.

Contractor's Equipment of All Kinds

**ZELNICKER IN ST. LOUIS**

## TRANSITS AND LEVELS

Rented by the Day, Week or Month  
Used instruments bought, sold and exchanged for new.

THE ENGINEERING AGENCY, Inc.  
53 W. Jackson Blvd. Chicago

# STREET SWEEPERS

## YES—THE "RELIANCE"

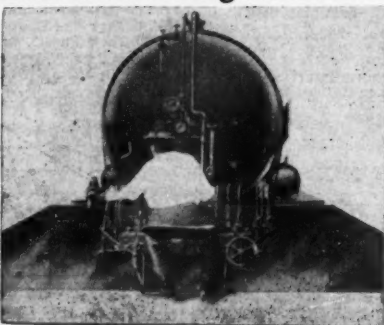
Catalog

### UNIVERSAL ROAD MACHINERY CO.

KINGSTON, N. Y.

## The WORLEY-LOGAN Atomizing Road Oilier

in actual operation. No other machine can spread oil over the surface and give an even and equal distribution at the proper temperature without closing the pores of the earth, which prevents penetration. Ask us why.



### THE GOOD ROADS COMPANY

MANUFACTURERS AND DISTRIBUTORS  
14th and Chestnut Streets, Kansas City, Missouri

**Winston Salem, N. C.**—"See Sewerage." **Ada, Okla.**—Benham Engineering Company, Consulting Engineer of Oklahoma City, Okla., preparing plans and specifications for water works and sewer extension. Bonds of \$100,000.00 have been voted and are waiting approval of the Attorney General. Work will consist entirely new reinforced concrete flume 36-in. in diameter, located at the water supply at Byrd's mill, building new intake, laying new water mains, 300,000 gallons capacity elevated tank, and new sewage disposal plant.

**Okmulgee, Okla.**—"See Sewerage." **Pharr, Tex.**—Mr. J. L. Arlitt of Austin was the successful bidder for the \$17,000 city hall and water works bonds.

**Seattle, Wash.**—Council considering a bond issue of \$4,000,000 for the const. of third water pipe line to include reservoir to cost \$800,000. The pipe line from Swan Lake to the city, which would be of concrete, reinforced concrete and wood stave, would cost \$1,000,000; two reservoirs in West Seattle would cost \$500,000 and the enlargement of the Volunteer Park reservoir would cost \$250,000.

**Burns, Wyo.**—Messrs. Bosworth, Chanute & Co. of Denver were the successful bidders for an issue of Water Plant and Light bonds to the amount of \$17,000.

**Niagara, Wis.**—Engineer W. S. Shields, of Chicago has been retained by the town to prepare plans for water works and sewerage system, water supply to be taken from artesian well, cost \$25,000.

### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Iowa City, Ia.**—Jno. L. Berry 2,500 ft. 15-in. vit pipe sewer. T. D. Davie, City Clk.

**Shrewsbury, Mass.**—John L. DePetre, Hanover St., Boston, Mass., for laying 6,300 ft. 6-in. c. i. bell and spigot pipe. Class C, on S. Quinsigamont ore.

**Tekamah, Neb.**—Contract has been awarded to J. W. Sherman for laying 3,300 feet of water mains, at \$3,900.

**Lodi, N. J.**—F. L. Dillon Constr. Co., reservoir owner United Piece Dye Works, care Mr. Jergenson. Re. come, cap. 3,000,000 gal.

### LIGHTING AND POWER.

**Tucson, Ariz.**—The city clerk was instructed to advertise for bids for the installing of electric conduits on Sixth Ave.

**Larns, Wyo.**—"See Water & Power."

### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Sheveport, La.**—Council accepted the six year lighting contracts offered the city by the Southwestern Gas and Electric Company.

### FIRE EQUIPMENT

**Sunnyvale, Cal.**—The claim for the new combination chemical and hose wagon was allowed, amounting to \$1,880. Plans and specifications were submitted and placed on file for a new fire house.

**Natchez, Miss.**—Council discussed the question of motor apparatus for the fire department, decided to investigate cost.

### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Boston, Mass.**—M. S. Kelliher \$30,000 for erecting and completing a fire station at Milton and Hamilton Sts., Readville.

### BRIDGES.

**Washington, D. C.**—Revised plans have been approved by the war department for constructing a bridge across the Potomac river between Metomkin, Va., and Riverside, Md., a short distance south of Indian Head, Md., by the Washington-Newport News Short Line Railway. Secretary Baker affixed his signature to the favorable report of General Black, chief of engineers.

**Great Falls, Mont.**—Geo. R. Metlin, bridge engineer, Montana State Highway Commission, recently informed the Cascade county commissioners that the state would make plans and specifications for both bridges across the Missouri river at First Ave. north and 15th St. in Great Falls.

## Chicago House Wrecking Co.

"World's Leading Buyers and Liquidators"

FACTORIES—RAILROADS—COMPLETE PLANTS, ETC.

Now offer for IMMEDIATE DELIVERY a

## Complete Water Works

in operation less than 30 days

## What Can You Use?

### 3,000,000-Gallon Pumping Engines

No. J5403—2 Horizontal Duplex tandem compound condensing high duty pumping engines; capacity, 3,000,000 gallons per 24 hours.

### 20-Inch Spiral Steel Pipe

No. J5402—20 Miles Abendroth and Root 20" spiral riveted pipe; No. 10 gauge steel. 25' lengths complete with Root bolted couplings.

### Valves

No. J5405—10,000 valves—Gate, Globe, Angle and Foot valves made by Crane Company, Kelly Jones and Chapman Valve Companies, sizes 2" to 36".

### Cast-Iron Pipe

No. J5404—350 lengths of cast-iron pipe—8", 10", 12", 14", 18", 20" and 24". Bell and spigot ends.

All other equipment included in our complete list No. MJ303. Get your copy now—name your wants today.

ADDRESS

**HARRIS BROTHERS CO., Owners**

35th and Iron Streets, Chicago

### MISCELLANEOUS.

**Brooklyn, N. Y.**—Deputy Street Cleaning Commissioner Mauro has been appealed to by the Greenpoint Taxpayers and Citizens Association to aid in an agitation begun by that organization to get a street flushing machine for the Greenpoint district.

**Minneapolis, L. I.**—Board of Supervisors voted to allow Supervisor Remsen of North Hempstead a sum not exceeding \$600 with which the Supervisor will purchase an auto with a trailer to carry tools from one job to another on the highways in his township.

**Providence, R. I.**—The new public bathhouse which the city will ultimately build to supersede the old floating baths in the Seekonk river at the Washington bridge, will be located on the northerly side of Trenton St., between Gano and Ives Sts.

**Montreal, Que.**—There were no bids received for the 5 per cent., 20-year City bonds to the amount of \$1,400,000.

### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Tucson, Ariz.**—Bid was submitted by James H. Hankins to supply the city with two Maxwell roadsters and one Maxwell touring car. The bid was placed on file.

**Washington, D. C.**—The war department's request for bids for 35,000 army motor trucks brought response from 8 concerns and when the offers were opened it was found that the total number for which bidders are ready to contract is many times the government's requirements. How many ordered will not be determined. The estimates of 35,000 made in asking for bids was based on the maximum transport needs of an army of 2,000,000 men. Virtually all the big motor companies and many of the smaller concerns submitted bids, the prices ranging from \$1,031 for one ton truck, to \$4,600 for five-ton vehicles. June 21.



## THE KUHLMAN GETS IT ALL!

It brings up a load going and coming. No matter how deep or how clogged your sewers are or what is in them, the Kuhlman Sewer Cleaning Machine will clean them at small cost. The price is reasonable. Write for catalogue and list of cities using it.

**CHAMPION POTATO MACHINERY CO.**  
HAMMOND, INDIANA

**ACTIVATED SLUDGE**  
AIR DIFFUSING PLATES

## FILTROS

**GENERAL FILTRATION CO., INC.**  
42 East Avenue, Rochester, N. Y.

## DECARIE INCINERATORS

FOR MUNICIPALITIES AND INSTITUTIONS

—ECONOMICAL AND SANITARY—

## STACY-BATES COMPANY

MEKNIGHT BLDG. SELLING AGENTS WHITE FOR LITERATURE MINNEAPOLIS

Manufacturers of

## CAST IRON PIPE



**FOR WATER—GAS—CULVERTS—SEWERS**  
Also Flexible Joint Pipe—Cylinders—Tubes, Milled and Plain Ends—High Pressure  
Fire Service Pipe—Special Castings. Flanged Castings a specialty.

*Quality and Service Guaranteed*



**Warren Foundry & Machine Company**  
Offices, 11 Broadway, N. Y. 201 Devonshire St., Boston, Mass.  
Works, Phillipsburg, N. J.

## Water Purification

for Municipal and Industrial Purposes,  
Gravity and Pressure Type.  
Re-filtration Systems for Natatoriums.

**NORWOOD ENGINEERING COMPANY**  
Florence, Mass.

## A. WYCKOFF & SON CO.

MANUFACTURERS OF

**Machine-Made Wood Stave Pipe  
and Steam Pipe Casing**

ELMIRA, N. Y.

## SEWAGE DISPOSAL

FOR


### ARMY POSTS AND CANTONMENTS

An interesting catalog, No. 16, showing small siphons for small plants; or catalog No. 14, showing equipment of various types for large plants. Apply to nearest office.

## Pacific Flush-Tank Co.

4241 Ravenswood Ave.  
Chicago

Singer Building  
New York

2" TO 16" FOR WATER, GAS AND GENERAL PURPOSES  
NO PACKING - NO POURING - NO GASKING  
**UNIVERSAL CAST IRON PIPE**  
REPLACES THE ONLY TOOL  
  
CENTRAL FOUNDRY COMPANY  
CHICAGO DALLAS NEW YORK ATLANTA SAN FRANCISCO  
See Trade Catalogues or Our Catalogue US 1035

## SLUICE GATES

Shear, Flap and Butterfly Valves

### FLEXIBLE JOINTS

## COLDWELL-WILCOX CO

Box 574

NEWBURGH, N. Y.

## S P C Pipe Seal Compound

Ductile properties unequalled. Impervious to sewage, acids and alkalis, guards absolutely against infiltration and penetration of roots.

Approved by prominent engineers.

### The Standard Paint Company

Specialists in bituminous compounds, paints and preservative coatings.

Woolworth Building

NEW YORK

Beacon Building  
BOSTON

Peoples Gas Building  
CHICAGO

**Meter-Roadway-Service & Valve Boxes**  
**Municipal and Special Castings**  
**Anything for Waterworks**

Write for Catalogue and Prices

## MODERN IRON WORKS

500 Ohio St., Quincy, Illinois

## Roberts Filter Mfg. Co.

Darby, Penna.

**WATER FILTERS** for Municipal and Industrial Plants.  
Gravity and Pressure Types.

**CHEMICAL DEVICES**

# BUYERS' CLASSIFIED DIRECTORY

of Names and Addresses of Firms from Whom to Buy Materials Appliances and Machinery Needed by Municipal Departments and Contractors

## Cement

Allentown Portland Cement Co., Allentown, Pa.  
Atlas Portland Cement Co., 30 Broad St., N. Y.  
Lehigh Portland Cement Co., Allentown, Pa.

## Contractors' Equipment

(See Paving Machinery also.)

**AIR COMPRESSING PLANTS (Portable).**  
\*Gardner Governor Co., Quincy, Ill.

## AIR DIFFUSING FILTERS PLATES.

\*General Filtration Co., Cutler Bldg., Rochester, N. Y.

## DUMPING BUCKETS.

Stuebner, G. L., Iron Works, Hancock St., Long Island City.

## MOTOR TRUCKS, DUMPING.

\*Duplex Truck Co., Lansing, Mich.  
\*General Vehicle Co., Long Island City, N. Y.  
\*Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.  
\*White Co., Cleveland, Ohio.

## PUMPS, DIAPHRAGM.

\*Parker, A. A., Watertown, N. Y.

## WAGONS.

\*Eagle Wagon Works, Auburn, N. Y.

## Fire Dept. Equipment

### AERIAL TRUCKS.

\*Boyd, James, & Bro., 25th and Wharton Sts., Philadelphia, Pa.

### COMBINATION CHEMICAL AND HOSE WAGONS.

\*American-La France F. E. Co., Elmira, N. Y.  
\*Boyd, James, & Bro., 25th & Wharton Sts., Philadelphia, Pa.  
\*Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.

### FIRE ALARM SYSTEMS.

\*Loper Fire Alarm Co., Stonington, Conn.

### FIRE ALARM TELEGRAPH.

\*Gamewell Fire Alarm Telegraph Co., Grand Central Terminal, N. Y.

### FIRE HOSE.

\*Eureka Fire Hose Co., 27 Barclay St., N. Y.  
\*Fabric Fire Hose Co., Duane & Church Sts., New York.

### GASOLINE STORAGE SYSTEMS.

\*Bowser, S. F. & Co., Inc., Fort Wayne, Ind.

### PUMPING ENGINES, GASOLINE.

\*American-La France F. E. Co., Elmira, N. Y.

### RUBBER TIRES.

\*Goodyear Tire & Rubber Co., Akron, O.  
\*U. S. Tire Co., Broadway & 58th St., New York.

### TRACTORS.

\*Couple Gear Freight Wheel Co., Grand Rapids, Mich.

### TRIPLE COMBINATION MOTOR.

\*American-La France F. E. Co., Elmira, N. Y.

## Paving Machinery

### ASPHALT PLANTS.

\*Cummer & Son Co., F. D., Cleveland, O.  
\*East Iron & Machine Co., Lima, O.  
\*Hetherington & Berner, Indianapolis, Ind.  
\*Warren Bros. Co., Boston, Mass.

### BRICK CONVEYERS.

\*Mathews Gravity Carrier Co., Elwood City, Pa.

### BRICK TESTING MACHINES.

\*Wetherington & Berner, Indianapolis, Ind.

### CONCRETE MIXERS.

\*Koehring Machine Co., Milwaukee, Wis.  
\*Northwestern Steel & Iron Works, Eau Claire, Wis.  
\*Ransome Concrete Machinery Co., 115 Broadway, New York.  
\*T. L. Smith Co., Milwaukee, Wis.

### OIL DISTRIBUTORS.

\*Austin Western Road Mach. Co., Chicago, Ill.  
\*Kinney Mfg. Co., 3535 Washington St., Boston, Mass.

### ROAD GRADERS.

\*Austin-Western Road Mach. Co., Chicago, Ill.  
\*F. B. Zieg Mfg. Co., Fredericktown, Ohio.  
\*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

### ROAD ROLLERS.

\*Austin-Western Road Mach. Co., Chicago, Ill.  
\*Buffalo Springfield Roller Co., Springfield, O.

### SAND SPREADERS.

\*Kindling Machinery Co., Milwaukee, Wis.

### SCARIFIERS.

\*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

### SCRAPERS.

\*Austin-Western Road Mach. Co., Chicago, Ill.  
\*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

### TAR KETTLES, ASPHALT HEATERS, ETC.

\*Littleford Bros., Cincinnati, O.  
\*Warren Bros. Co., 142 Berkeley St., Boston.

## Paving Materials

### ASPHALT.

\*Bitoslag Paving Co., 90 West St., New York.  
\*Pioneer Asphalt Co., Lawrenceville, Ill.  
\*Standard Oil Co., 26 Bway, New York, N. Y.  
\*Standard Oil Co., 72 W. Adams St., Chicago.  
\*U. S. Asphalt Refining Co., 90 West St., N. Y.

### BINDERS.

\*Baker, John, Jr., 17 Battery Pl., New York.  
\*Barrett Co., The., 17 Battery Pl., N. Y.  
\*Pioneer Asphalt Co., Lawrenceville, Ill.  
\*Robeson Process Co., 18 E. 41st St., N. Y.  
\*Standard Oil Co., 26 Broadway, N. Y.  
\*U. S. Asphalt Refining Co., 90 West St., N. Y.

### BITUMINOUS PAVEMENTS.

\*Amies Road Co., Easton, Pa.  
\*Bituminized Road Co., Kansas City, Mo.  
\*Barrett Co., The., 17 Battery Pl., N. Y.  
\*Warren Bros. Co., 142 Berkeley St., Boston.

### BRICK.

\*The Barr Clay Co., Streator, Ill.  
\*Metropolitan Paving Brick Co., Canton, O.  
\*Schuykill Valley Vitriified Products Co., Oaks, Montgomery County, Pa.  
\*Terre Haute Vitriified Brick Co., Terre Haute, Ind.  
\*Thornton Fire Brick Co., 909 Goff Bldg., Clarksburg, W. Va.

### EXPANSION JOINTS.

\*Barrett Co., The., 17 Battery Pl., N. Y.  
\*Carey Mfg. Co., Philip, 40 Wayne Ave., Lockland, Cincinnati, O.  
\*Pioneer Asphalt Co., Lawrenceville, Ill.  
\*Trussed Concrete Steel Co., Youngstown, O.

### JOINT PROTECTION (CONCRETE).

\*Trussed Concrete Steel Co., Youngstown, O.

### OIL.

\*Baker, John, Jr., 17 Battery Pl., N. Y.  
\*Barrett Co., The., 17 Battery Pl., N. Y.  
\*Indian Refining Co., 44 Whitehall Bldg., New York, N. Y.  
\*Pioneer Asphalt Co., Lawrenceville, Ill.  
\*Standard Oil Co., 26 Broadway, N. Y.  
\*U. S. Asphalt Refining Co., 90 West St., N. Y.

### ROCK ASPHALT.

\*Republic Creosoting Co., Indianapolis, Ind.  
\*Wyckoff Pipe & Creosoting Co., 30 E. 42d St., New York.

## Public Lighting

### INSULATED WIRES AND CABLES.

\*Okonite Co., 253 Broadway, N. Y.

## Scientific Instruments

### ENGINEERS' TRANSITS AND LEVELS.

\*Buff & Buff, Jamaica Pl. Sta., Boston, Mass.  
\*Heller & Brightly, 1124 Spring Garden, Philadelphia, Pa.

## Sewerage

### ACTIVATED SLUDGE AIR DIFFUSING PLATES.

\*General Filtration Co., Cutler Bldg., Rochester, N. Y.

### CULVERT FORMS.

\*Northwestern Steel & Iron Works, Eau Claire, Wis.

### PIPE (CAST IRON).

\*Central Foundry Co., 90 West St., N. Y. City.  
\*Warren Foundry & Machine Co., 11 Broadway, N. Y.  
\*Gallon Iron Works & Mfg. Co., Gallon, Ohio.

### PIPE CLEANING MACHINES.

\*Champion Potato Machinery Co., 332 Sheffield Ave., Hammond, Ind.  
\*Stewart, W. H., 1614 Locust St., St. Louis.  
\*Turbine Sewer Machine Co., 195 11th St., Milwaukee, Wis.

### PIPE JOINT COMPOUND.

\*Superior Chemical Co., St. Louis, Mo.  
\*Pacific Flush Tank Co., 149 Broadway, N. Y.  
\*Standard Paint Co., Woolworth Bldg., New York.

### SEWAGE DISPOSAL.

#### EJECTORS.

\*Pacific Flush Tank Co., 149 Broadway, N. Y.

#### NOZZLES.

\*Pacific Flush Tank Co., 149 Broadway, N. Y.

#### SIPHONS AND FLUSH TANKS.

\*Pacific Flush Tank Co., 149 Broadway, N. Y.

### VITRIFIED FIRE CLAY SEWER TILE.

East Ohio Sewer Pipe Co., Irondale, O.

## Street Cleaning

### And Refuse Disposal

#### FLUSHERS.

\*General Vehicle Co., Long Island City, N. Y.  
\*Tiffin Wagon Co., Tiffin, Ohio.

\*Advertisers—See Alphabetical Index on last white page.



# BUYERS' CLASSIFIED DIRECTORY

**INCINERATORS.**  
\*Stacy-Bates Co., McKnight Building,  
Minneapolis, Minn.

**SPRINKLING WAGONS.**  
\*Austin Western Road Mach. Co., Chicago, Ill.  
\*General Vehicle Co., Long Island City, N. Y.  
\*Tiffin Wagon Co., Tiffin, O.

**STREET SWEEPERS.**  
\*Austin Western Road Mach. Co., Chicago, Ill.  
\*Baker Mfg. Co., Springfield, O.

**SNOW FLOWS.**  
\*Baker Mfg. Co., Springfield, O.

## Street Signs

\*Lebanon Machine Co., Lebanon, N. H.

## Water Works

**AIR COMPRESSORS.**  
\*Gardner Governor Co., Quincy, Ill.  
\*Sullivan Mch. Co., 122 S. Michigan Ave.,  
Chicago, Ill.

**AIR LIFT PUMPS.**  
\*Sullivan Mch. Co., 122 S. Michigan Ave.,  
Chicago, Ill.

**CORPORATION AND STOP COCKS.**  
\*Glauber Brass Mfg. Co., Cleveland, Ohio.

**DEEP WELL PUMPS.**  
\*Cook, A. D., Lawrenceburg, Ind.  
\*Layne & Bowler Co., 1117 Exchange Bldg.,  
Memphis, Tenn.

**FILTERS.**  
\*N. Y. Continental Jewell Filtration Co.,  
15 Broad St., N. Y.  
\*Pittsburgh Filter Co., Pittsburgh, Pa.

**FILTRATION PLANTS.**  
\*Norwood Engineering Co., Florence, Mass.  
\*Pittsburgh Filter Co., Pittsburgh, Pa.  
\*Roberts Filter Co., Darby, Pa.

**FLAP VALVES.**  
\*Coldwell-Wilcox Co., Newburgh, N. Y.

**METERS.**  
\*Badger Meter Co., 261 Third St., Milwaukee.  
\*Buffalo Meter Co., 290 Terrace, Buffalo, N. Y.  
\*Hersey Mfg. Co., South Boston, Mass.  
\*Pittsburgh Meter Co., East Pittsburgh, Pa.  
\*Thomson Meter Co., 110 Bridge St., Bklyn.  
Union Water Meter Co., 33 Hermon St.,  
Worcester, Mass.

**METER BOXES.**  
\*Clark, H. W. Co., 1508 Broadway, Mattoon,  
Ill.  
\*Ford Meter Box Co., Wabash, Ind.

**METER TESTING MACHINES.**  
\*Clark, H. W. Co., 1508 Broadway, Mattoon,  
Ill.  
\*Ford Meter Box Co., Wabash, Ind.

**PIPE, CAST IRON.**  
\*Amer. Cast Iron Pipe Co., First National  
Bank Bldg., Chicago, Ill.  
\*Central Foundry Co., 90 West St., New York  
City.

\*Clow, Jas. B. & Sons, 544 S. Franklin St.,  
Chicago, Ill.  
\*Donaldson Iron Co., Emaus, Lehigh Co., Pa.  
\*Fox, John & Co., 253 Broadway, N. Y.  
\*Glamorgan Pipe & Foundry Co., Lynchburg,  
Va.

\*Lynchburg Foundry Co., Lynchburg, Va.  
\*Massillon Iron & Steel Co., Massillon, O.  
\*Standard Cast Iron Pipe & Foundry Co.,  
Bristol, Pa.  
\*U. S. Cast Iron Pipe & Foundry Co.,  
Burlington, N. J.  
\*Warren Foundry & Machine Co., 11 Broad-  
way, New York, N. Y.

**PUMPS.**  
\*Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
\*Artesian Well & Supply Co., Providence, R. I.  
\*Cook, A. D., Lawrenceburg, Ind.  
\*Dayton, Dick, Co., Quincy, Ill.  
\*Gardner Governor Co., Quincy, Ill.

## SCREENS FOR WELLS.

\*Cook, A. D., Lawrenceburg, Ind.  
\*Layne & Bowler Co., 1117 Exchange Bldg.,  
Memphis, Tenn.

## SERVICE BOXES.

\*Modern Iron Works, Quincy, Ill.

## SMEAR VALVES.

\*Coldwell-Wilcox Co., Newburgh, N. Y.

## SLEEVES AND VALVES.

\*Smith, A. P., Mfg. Co., East Orange, N. J.

## SLUICE GATES.

\*Coldwell-Wilcox Co., Newburgh, N. Y.

## STERILIZING APPARATUS.

\*Electro Bleaching Gas Co., 19 East 41st St.,  
New York.

## STRAINERS.

\*Cook, A. D., Lawrenceburg, Ind.

## TAPPING MACHINES.

\*Smith, A. P., Mfg. Co., East Orange, N. J.

## VALVES.

\*Flower-Stephens Mfg. Co., 105 Parkinson St.,  
Detroit, Mich.

\*Glauber Brass Mfg. Co., Cleveland, Ohio.

## VALVE BOXES.

\*Modern Iron Works, Quincy, Ill.

## WATER MAIN CLEANING.

Nat'l Water Main Cl'ng Co., 50 Church St., N.Y.

## WATER SOFTENING AND PURIFYING.

\*N. Y. Continental Jewell Filtration Co.,  
15 Broad St., N. Y.

## WATER SUPPLY FROM WELL

## SYSTEMS.

Boyd Eng. Co., Inc., 11 B'way, N. Y.

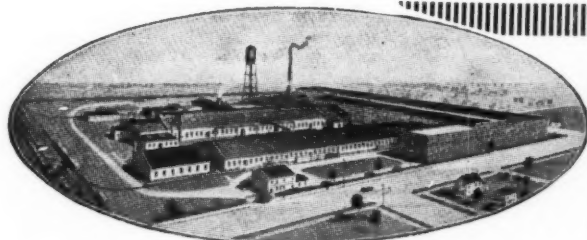
\*Cook, A. D., Lawrenceburg, Ind.

## WATER WORKS EQUIPMENT.

\*H. W. Clark Co., 1508 Broadway, Mattoon,  
Ill.

## WELL DRILLS.

\*Layne & Bowler Co., 1117 Exchange Bldg.,  
Memphis, Tenn.



## 65 Years Have Been Spent In Developing This Organization

The Result? "Michigan" products have become the standard—the quality gauge for municipalities throughout the country.

"Michigan" Gate Valves are standard in all larger cities. They're built strictly to the American Water Works Association specification. The New York-St. Louis Standard Specification has adopted the "Michigan" type as its standard.

# MICHIGAN

Gate Valves  
Sluice Gates  
Valve Boxes

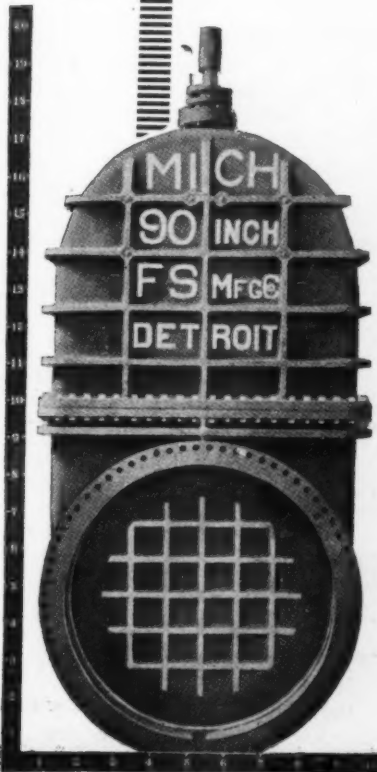
Floor Stands  
Indicator Posts  
Fire Hydrants

If you've never used "Michigan" products, you have proof of their quality in the long list of pleased users. 65 years of experience has built up a trained organization which is anxious to serve you.

## GET "BLUE BOOK"

Put our "Blue Book" in your reference file—you'll find it contains valuable information. A card will bring it without obligation.

**Flower-Stephens Mfg. Co.**  
105 Parkinson St., Detroit, Michigan



## Directory of Consulting Engineers Engaged in Municipal and Public Works

### Alvord, John W. Chas. B. Burdick

Consulting Engineers  
Reports, Investigations, Plans and Specifications for Water Supplies, Water Purification, Water Power, Sewerage, Sewage Disposal.  
Hartford Building CHICAGO

### Balley-Wehr and Walden Engineers

Water power development, electric power; railway, gas, industrial plants; efficiency engineering; appraisals and reports.

BALTIMORE, MD. CHICAGO, ILL.

### Black & Veatch

Kansas City, Mo. Interstate Bldg. Consulting Engineers  
Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations, Reports.  
B. B. Black N. T. Veatch, Jr.

### Brossman, Chas.

Consulting Engineer  
Indianapolis, Ind. Merchants Bank Bldg.  
Water Supply, Sewerage and Disposal. Lighting Plants—Supervision of Construction and Operation. Appraisals—Expert Testimony.

### KANSAS CITY, MO. Inter-State Bldg Burns & McDonnell

Consulting Engineers  
Appraisals Rate Investigations  
Expert Testimony Water Works  
Sewerage Lighting  
Clinton S. Burns R. E. McDonnell

### Caird, James M.

Assoc. Am. Soc. C. E.  
Chemist and Bacteriologist  
Office and Laboratory.  
271 RIVER STREET TROY, N. Y.  
Water Analysis and Tests of Filter Plants

### Collins, John L.

Consulting Civil and Sanitary Engineer  
WATER SUPPLY and PURIFICATION  
SEWERAGE and SEWAGE DISPOSAL  
Plans, Estimates and Supervision of Construction  
38 Church Street New York City

### Dow & Smith

CHEMICAL ENGINEERS  
Consulting Paving Engineers  
A. W. Dow, Ph.B. F. P. Smith, Ph.B.  
Mem. Am. Inst. Ch. Engrs.  
Mem. Am. Soc. Civ. Engrs.  
Asphalt, Bitumens, Paving, Hydraulic Cement, Engineering Materials.  
151-3 East 23d St. NEW YORK

### Fuller & McClintock CONSULTING HYDRAULIC ENGINEERS and SANITARY EXPERTS

178 Broadway, New York City  
Water Supply and Purification, Sewerage and Drainage, Disposal of Sewage and Refuse, Investigations of Epidemics, Public Utility Valuations, Supervision of Construction and Operation.  
GEORGE W. FULLER JAMES R. MCCLINTOCK  
JESSE K. GIESEY

### JOHN H. GREGORY

CONSULTING HYDRAULIC ENGINEER AND  
SANITARY EXPERT  
178 Broadway, New York City  
Reports, Investigations, Plans and Specifications for Sewerage, Sewage Disposal, Water Supply, Water Purification, and Garbage and Refuse Disposal.

### Hansen & Coulter

Hydraulic and Sanitary Engineers

August E. Hansen Waldo S. Coulter  
2 Rector St., New York City

### Hazen, Whipple & Fuller

Consulting Hydraulic and Sanitary Engineers; Water Supply, Sewerage, Drainage, Valuations, Supervision of Construction and Operation.

ALLEN HAZEN G. C. WHIPPLE  
W. E. FULLER F. F. LONGLEY  
C. M. EVERETT L. N. BABBITT  
H. MALCOLM PIRNIE

38 East 42nd Street, New York City

### Rudolph Hering, D.Sc.

CONSULTING ENGINEER

Water Supply, Sewage and Refuse Disposal  
170 Broadway, New York City  
Telephone—Cortlandt 6309

### J. W. Howard

Consulting Engineer

Pavements and Roads

Specifications, Qualities of Materials,  
Chemical Analyses and Tests,  
Inspection, &c. 27 Years' Experience.  
1 Broadway, NEW YORK

### Johnson, George A.

M. Am. Soc. C. E.  
Consulting Hydraulic Engineer  
and Sanitary Expert  
150 Nassau Street, New York

Water Supply and Purification, Sewerage and Sewage Disposal, Plans and Reports, Supervision of Construction, Valuations, Improved Operation of Existing Plants, Investigation of Epidemics.

### Knowles, Morris

M. Am. Soc. C. E.  
Consulting Municipal Engineer  
Planning and Construction of Industrial Towns  
Water Supply, Water Purification, Sewerage and Sewage Disposal  
1200 B. F. Jones Bldg. Philadelphia, Pa.

### Lederle & Provost

SANITARY EXPERTS AND  
HYDRAULIC ENGINEERS

Water Supply, Sewage Purification  
Andrew J. Provost, C. E., New York City  
39-41 West 38th St.

### Morse, William F.

Consulting Sanitary Engineer  
38 West St. New York  
Surveys, Reports, Specifications, Proposal Forms for Disposal of Waste of Municipalities, Institutions and Business Establishments, Designs for Special Furnaces for any purpose. Expert Investigation and Reports on Any Question of Waste Collection or Disposal.

### Pollock and Taber

Consulting Engineers

Pavements, Highways, Water Supply, Drainage, Sewerage and Sewage Disposal, Designs, Specifications and Supervision.  
Clarence D. Pollock } Members  
George A. Taber } Am. Soc. C. E.  
Park Row Building New York City

### Potter, Alexander

50 Church St.  
New York City  
Civil and Sanitary Engineer  
Specialties:  
Water Supply, Sewerage and Pavements

### Sarbinsky, M.

Consulting Electrical Engineer  
Formerly Secretary, Department of Public Utilities, City of Cleveland; President, The Service Electrical Company.  
Electrical Contracting and Engineering  
2082 E. 4th Street Cleveland, Ohio

### Taylor, Henry W.

100 State St. Albany, N. Y.  
Consulting Engineer  
Water, Sewerage, Trade Wastes, Pumping Plants

### Wagner, Bernard M.

55 Liberty St.  
New York City  
Consulting Engineer  
for  
Municipal and Public Utility Works

## Proposal Advertising

Municipal officials will serve their constituents well by seeing that PROPOSALS FOR MUNICIPAL IMPROVEMENTS of all kinds are inserted in

## MUNICIPAL JOURNAL

243 W. 39th St., New York

## DIRECT Proposal Advertising Pays

If you had to be operated upon you would go to a Specialist—a Surgeon—not a general practitioner.

MUNICIPAL JOURNAL is as much a specialist in *Municipal Necessities* as a surgeon is to medicine. Those who want to do business with Cities, Towns and Villages consult its weekly issues first.

ADVERTISE your call for bids in this live specialized weekly and you will get more bidders and reduce costs.

Rates \$2.00 an inch.

**M**MUNICIPAL  
JOURNAL

243 W. 39th St.



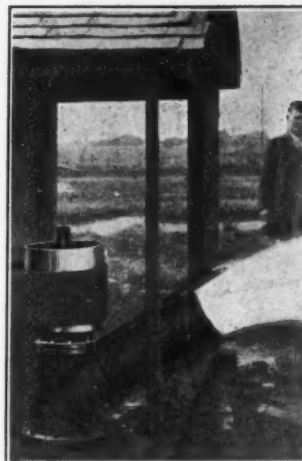
# WATER WORKS EQUIPMENT

## APPROVAL HERSEY DETECTOR METER

*The Hersey Detector Meter has been accepted for eleven years in 3, 4, 6, 8, 10 and 12" sizes without any restrictions or conditions of any kind by every Insurance Company, Stock and Mutual, doing business in the United States, and by the Water Departments and Water Companies in more than 500 Cities and Towns for use on over 3,000 Fire Services protecting nearly \$2,000,000,000. worth of Insured Property.*

### HERSEY MANUFACTURING COMPANY

BOSTON	COLUMBUS, O	SAN FRANCISCO
NEW YORK	PHILADELPHIA	LOS ANGELES
CHICAGO	ATLANTA	PORTLAND, ORE



**"Water  
or  
No  
Pay"**

**That's  
Our Way**

**WRITE  
TODAY**

We Specialize in Municipal and Corporate Water Plants. Over 3,000 Successful installations.

Our Consulting Hydraulic Engineers will personally inspect and report to you on the feasibility of your project.

Write today for information and free literature.

### LAYNE & BOWLER CO.

Ground Water Well Specialists  
1117 Exchange Bldg., Memphis, Tennessee.

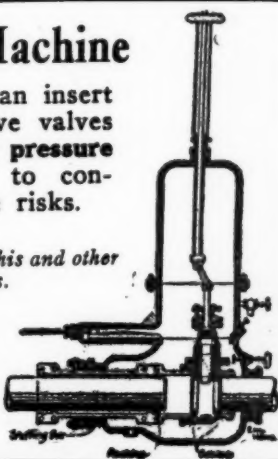
## Valve Inserting Machine

With this machine you can insert new and cut out defective valves in water mains with full pressure on, avoiding annoyance to consumers and increased fire risks.

*Write for complete description of this and other water works specialties.*

See Sweets' Catalogue, Engineering Edition, for Details and Particulars.

**THE A. P. SMITH MFG. CO.**  
EAST ORANGE, N. J.



**GRAVITY and  
PRESSURE**

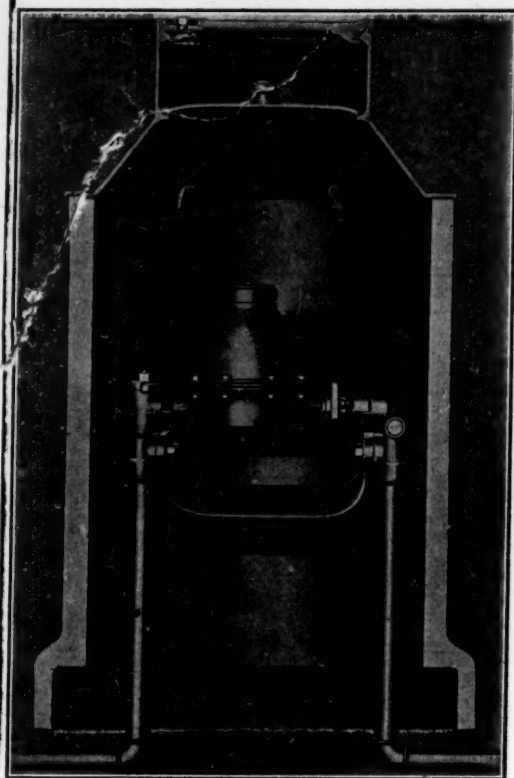
# FILTERS

Send for  
Bulletin No. 15

Hypochlorite Apparatus and Water Softening Plants

**THE NEW YORK CONTINENTAL JEWELL FILTRATION COMPANY**

111 W. Monroe Street, CHICAGO    Inter-State Bldg., KANSAS CITY    New Birks Bldg., MONTREAL    15 Broad Street, NEW YORK



## A Meter Well Bought is Not Half Set

We believe that the curb is the only logical place for a water meter, for the following reasons:

- A.—Meter is safe from frost damage.
- B.—Meter is safe from tampering.
- C.—Consumer is always at home to reader and in consequence inspector will read many more meters per day than with basement settings.
- D.—The reader is relieved of any temptation to record fictitious readings because of consumer's absence from home.
- E.—The liability of admitting a burglar under guise of a meter reader is avoided.
- F.—All water entering property is registered and leaks on inside piping will be promptly repaired.
- G.—Meter is less liable to damage from hot water backing up from range boiler when located at curb.
- H.—Ordinary curb box and curb stop may be done away with if desired.

*There are a lot of other reasons and meter boxes are cheap. Write us.*

**FORD METER BOX COMPANY, Wabash, Indiana**

### ABSOLUTE RELIABILITY AND OPERATING ECONOMY ARE THE MOST ESSEN- TIAL REQUIREMENTS OF **PUMPING ENGINES**

The great number of Allis-Chalmers Pumping Engines in continuous service, 365 days a year, demonstrates their reliability.

Official duty tests and published annual reports of station operating costs prove their **HIGH ECONOMY**.

*Is There Any Municipal Problem  
of Greater Importance  
Than the Water Supply of a City?*

**Allis-Chalmers Manufacturing Company**

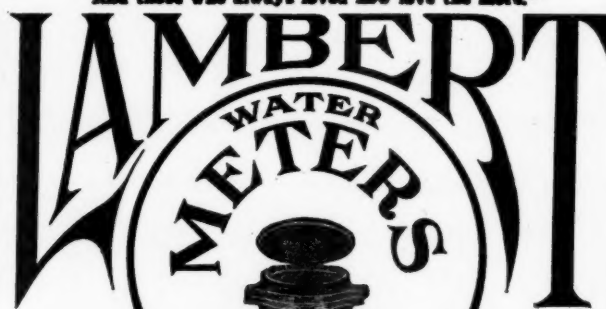
Pumping Engine Department, Milwaukee, Wis.

For all Canadian business refer to  
Canadian Allis-Chalmers, Limited, Toronto, Ont.

#### FOREIGN REPRESENTATIVES

Frank R. Perrot, 883 Hay Street, Perth, W. A.  
Frank R. Perrot, 294 Clarence St., Sydney, N. S. W.  
H. I. Keen, 732 Salisbury House, London Wall, E. C., England  
Mark R. Lamb, Huerfano 1157, Casilla 2653, Santiago, Chile

*"Let those now love who've never loved before,  
And those who always loved now love the more."*



**Long  
Life.**

**Lasting  
Accuracy.**

**All parts  
interchange-  
able.**

**Maintenance  
cost nominal.**

Their merits have made meter systems popular.

A good article is always worth the price.

All improvements which the tests of time and long service show to be requisite in a **Perfect Water Meter** are embodied in the **Lambert**.

#### ONE MODEL ONLY.

Made in all sizes  $\frac{3}{8}$ " to 6" of best bronze Composition throughout, fitted with Unbreakable reinforced disc-pistons.

*Illustrated Price List on Application.*

Address Dept. C.

**THOMSON METER CO.**

100-110 BRIDGE STREET

BROOKLYN, N. Y.



400,000,000 Million Gallons of  
**PURE WATER**  
 furnished by  
**Pittsburgh Filter Plants**



FILTRATION PLANT, WACO, TEXAS

Nearly 100 Cities Supplied

**BIG PLANTS WITH DAILY CAPACITIES RANGING FROM ONE HALF MILLION TO 160,000,000 GALLONS.**

Gauges, Controllers, Operating Tables, Hypo. Plants. Everything for Pure Water

Manufactured by

**PITTSBURGH FILTER MFG. CO.**  
 KANSAS CITY, MO.      PITTSBURGH, PA.

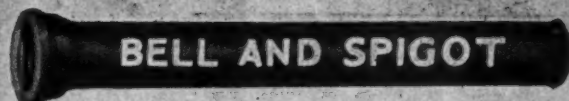
NICHOLAS ENGEL  
**JOHN FOX & CO.**

253 Broadway, New York

**CAST IRON  
 WATER AND GAS PIPE**



FLANGE



BELL AND SPIGOT

Special Castings

**MANHOLE FRAMES AND COVERS**

Fire Hydrants, Valves, Sluice Gates, Lamp Posts  
 General Foundry and Machine Work

Supplies for Gas and Water Works  
 Railroads, Contractors, Engineers, Etc.

AMERICAN AND NIAGARA  
**WATER METERS**



**BUFFALO METER CO.**  
 17 MAIN ST. BUFFALO, N.Y.

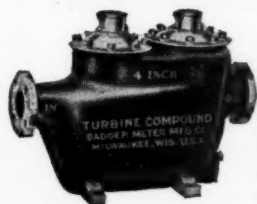


**The Cast Iron Pipe Publicity Bureau**

1 BROADWAY

NEW YORK

**FROM A DRIP TO FULL CAPACITY**



Water cannot come too fast for the Badger Turbine Compound Meter.

Service fluctuation does not bother it. The load switches from the disc (or slow movement) meter

to the turbine (or quick movement) meter automatically.

Write for catalog.

**BADGER METER MFG. CO.**  
 MILWAUKEE, WIS.



**HAYTON  
 CENTRIFUGAL PUMPS**



**For municipal water-works, sewage pumping plants, fire and booster service.**

**RELIABLE—ECONOMICAL—CONVENIENT**

Put your pumping problems up to our engineers. This free service—the result of years of experience—can be of real help to you.

Write for catalog.

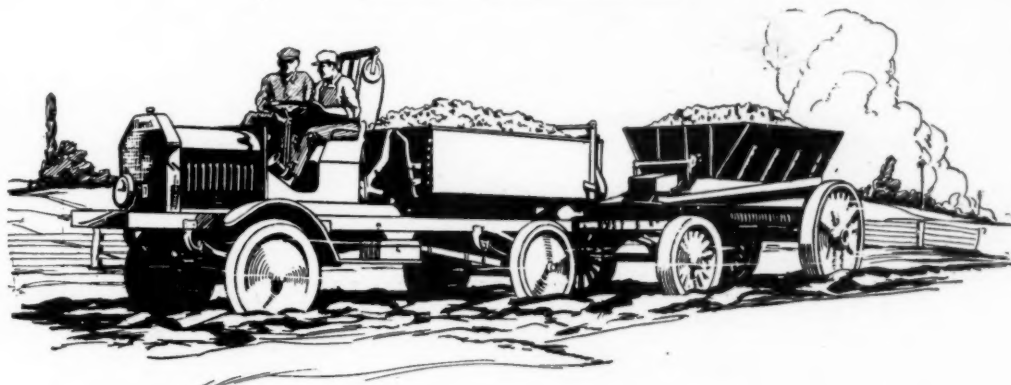


**DAYTON DICK CO.**  
 QUINCY, ILLINOIS









## Duplex 4-Wheel Drive Opens Every Section of the United States to the Motor Truck

**U**NFAVORABLE road conditions and lack of roads have often been offered as objections to the motor truck.

But the Duplex—the original 4-Wheel Drive Truck—has overcome all such objections. It is hauling capacity loads—3½ tons—and pulling two or three trailers over logging roads in the Western mountains—

Sand trails in the turpentine States—  
Steep hills in New England—  
Paths across the Western deserts—  
Oil fields in the South and West—  
Gravel pits and quarries—  
Slippery clay roads and highways with  
hub-deep mud.

All sections of the country are now open to the motor truck—the Duplex Truck.

A Duplex has replaced and is doing the work of 50-mule teams in the South and West.

It has taken the place of huge tractors,

and is hauling 24-foot road graders at almost twice the speed of the tractor.

It is hauling ore from mines that could not be operated before, because it was either too expensive or impractical to transport the metal overland.

It is reducing haulage costs to the absolute minimum for contractors, lumber operators, fuel dealers, manufacturers, oil operators, mining companies, ice dealers, road builders, wholesale grocers, and pit and quarry owners.

And it is performing this heavy haulage work more economically than any other truck built. The severest tests and most thorough demonstrations have conclusively proven this assertion time and again.

If you would lower your haulage costs let us give you facts and figures for your particular business, and send you our descriptive catalog, which explains in detail the many exclusive mechanical features of the Duplex—the truck that hauls capacity loads anywhere.

ADDRESS ALL COMMUNICATIONS TO DEPT. 118

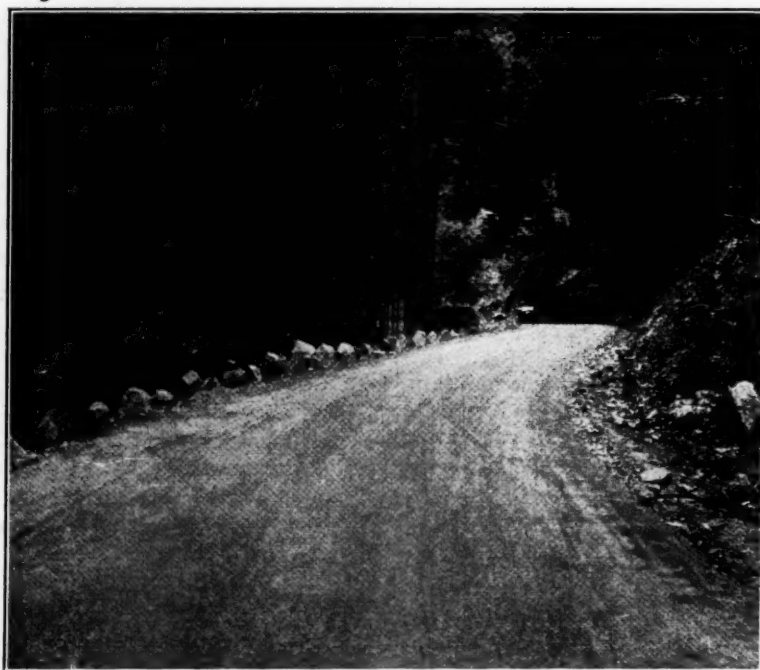
**DUPLEX TRUCK COMPANY**  
LANSING MICHIGAN

# WARRENITE

The Favorite of the Counties That Know

*Because*

it "stands up" under that hard, continuous strain it is subjected to by heavy motor vehicles.



WARRENITE ROADWAY, COLUMBIA RIVER HIGHWAY, ORE.  
Forested Aisles—Occasionally the Columbia Highway Penetrates Timbered Slopes and then Emerges into the Open Canyon with its Vistas of Mountain and River.

It is built and sold on merit.

It lasts longer than most constructions.

It is real economical road surface in the long run.

Columbia River Highway, Multnomah County, Oregon, has surfaced over 60 miles of their roads with WARRENITE.

You should know all about WARRENITE roadway and what it is made of.

Write today for illustrated booklets. Mixture agreement and specifications available to all experienced contractors.

Learn more about this modern ideal country road surface.

## WARREN BROTHERS COMPANY

Executive Offices: BOSTON, MASS.

DISTRICT OFFICES:

New York, N. Y.  
Phoenix, Ariz.  
Nashville, Tenn.

San Francisco, Cal.  
Chicago, Ill.  
Los Angeles, Cal.

St. Louis, Mo.  
Montreal, P. Q.  
Portland, Ore.

Richmond, Va.  
Utica, N. Y.  
Winnipeg, Man.

Toronto, Ont.  
Vancouver, B. C.



